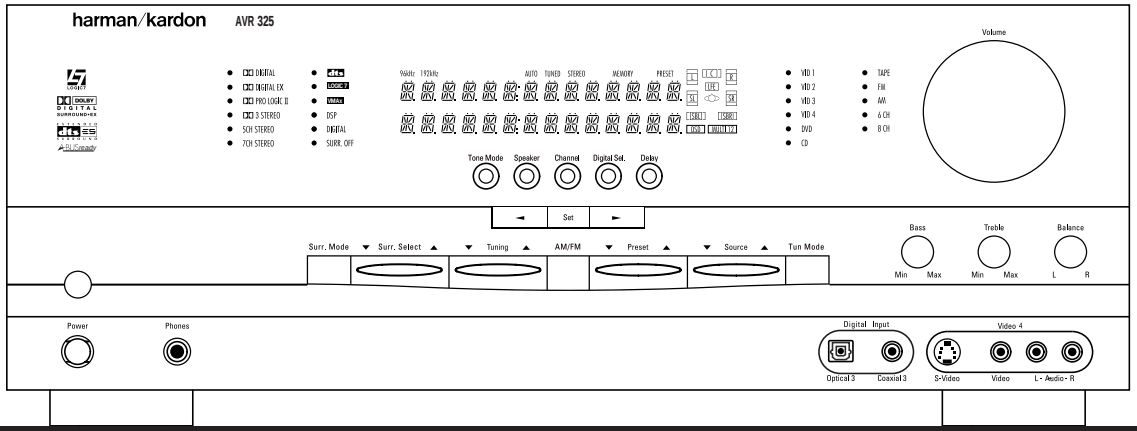
harman/kardon®

Power for the Digital Revolution®

AVR 325

AUDIO/VIDEO RECEIVER

OWNER'S MANUAL



3 Introduction
4 Important Safety Information
4 Unpacking
5 Front-Panel Controls
7 Front-Panel Information Display
8 Rear-Panel Connections
11 Main Remote Control Functions
14 Zone II Remote Control Functions
15 Installation and Connections
18 System Configuration
18 Speaker Placement
18 System Setup
19 Input Setup
20 Surround Setup
21 Speaker Setup
23 Delay Settings
24 Output Level Adjustment
24 Using EzSet™
25 Manual Output Level Adjustment
26 Operation
26 Basic Operation
26 Source Selection
26 6-Channel/8-Channel Direct Input
26 Volume Control
26 Surround Mode Selection
27 Digital Audio Playback
28 Surround Mode Chart
30 Tuner Operation
31 Tape Recording
31 Output Level Trim Adjustment
32 Advanced Features
32 Surround Amplifier Channel Assignment
32 Display Brightness
32 Turn-On Volume Level
32 Semi-OSD Settings
33 Full-OSD Time-Out Adjustment
34 Multiroom Operation
34 Multiroom Setup
34 Multiroom Operation
36 Programming the Remote
36 Programming the Remote
36 Direct Code Entry
36 Auto Search Method
36 Code Readout
36 Learning Codes
37 Macro Programming
38 Programmed Device Functions
38 Volume Punch-Through
38 Channel Control Punch-Through
39 Transport Control Punch-Through
39 Reassigning Device Control Selectors
39 Resetting the Remote Memory
40 Function List
42 Setup Code Tables
54 Troubleshooting Guide
54 Processor Reset
55 Technical Specifications

See trademark acknowledgements on page 55.

Typographical Conventions

In order to help you use this manual with the remote control, front-panel controls and rear-panel connections, certain conventions have been used.

EXAMPLE – (bold type) indicates a specific remote control or front-panel button, or rear-panel connection jack

EXAMPLE – (OCR type) indicates a message that is visible on-screen or on the front-panel information display

1 – (number in a square) indicates a specific front-panel control

❶ – (number in a circle) indicates a rear-panel connection

❶ – (number in an oval) indicates a button or indicator on the remote

A – (letter in a square) indicates an indicator in the front-panel display

Ⓐ – (letter in an oval) indicates a button on the Zone II remote

Thank you for choosing Harman Kardon®! With the purchase of a Harman Kardon® AVR 325 you are about to begin many years of listening enjoyment. Designed to provide all the excitement and detail of movie soundtracks and every nuance of musical selections, the AVR 325 is truly a multichannel receiver for the new millennium.

The AVR 325 has been engineered so that it is easy to take advantage of all the power of its digital technology. However, to obtain the maximum enjoyment from your new receiver, we urge you to read this manual. A few minutes spent learning the functions of the various controls will enable you to take advantage of all the power the AVR 325 is able to deliver.

If you have any questions about this product, its installation or its operation, please contact your retailer or custom installer. They are your best local sources of information.

Description and Features

The AVR 325 is among the most versatile and multi-featured A/V receivers available, incorporating a wide range of listening options. In addition to Dolby* Digital and DTS® decoding for digital sources, a broad choice of Matrix surround-encoded or Stereo surround modes are available for use with sources such as CD, VCR, TV broadcasts and the AVR 325's own FM/AM tuner. Along with Dolby Digital EX, Dolby Pro Logic* II, DTS Neo:6®, Dolby 3 Stereo, and Hall and Theater modes, the AVR 325 offers Harman International's exclusive Logic 7® process in both 5.1 and 7.1 versions to create a wider, more enveloping field environment and more defined fly-overs and pans. Another exclusive is VMAx®, which uses proprietary processing to create an open, spacious sound field even when only two front speakers are available. Finally, the AVR 325 offers decoding of MP3 data, so that you may listen to the latest music selections directly from compatible computers or playback devices with the power and fidelity you expect from Harman Kardon.

In addition to providing a wide range of listening options, the AVR 325 is easy to configure so that it provides the best results with your speakers and specific listening-room environment. On-screen menus make it simple to enter settings for speaker configurations and bass management, and the EzSet™ remote measures a system's sound levels and automatically calibrates them for perfectly balanced sound field presentation.

For the ultimate in flexibility, the AVR 325 features connections for five video devices, all with both composite and S-Video inputs. Two additional audio inputs are available, and six digital inputs make the AVR 325 capable of handling all the latest digital audio sources.

For compatibility with the latest HDTV video sources and progressive scan DVD players, the AVR 325 also features two-input, wide-bandwidth, low-crosstalk component video switching.

The front panel offers coax and optical digital inputs for direct connection to digital recorders. Two video recording outputs, preamp-out and a color-coded eight-channel input, with complete digital bass management, make the AVR 325 virtually future-proof, with everything needed to accommodate tomorrow's new formats right onboard.

The AVR 325's flexibility and power extend beyond your main home theater or listening room. The AVR 325 includes a sophisticated multizone control system that allows you to select one source for use in the main room and a different source for audio and video distribution to a second zone. Complete volume control in the second zone is possible with a separate infrared control link. To make it easy to operate the AVR 325 from a remote zone, a separate "Zone II" remote is included. Additional multiroom options include the option to assign two of the AVR 325's output channels to the multiroom system and the ability to link the AVR 325 to innovative A-BUS® keypads for multiroom operation without the need for external amplifiers.

The AVR 325's powerful amplifier uses traditional Harman Kardon high-current design technologies to meet the wide dynamic range of any program selection.

Harman Kardon invented the high-fidelity receiver almost fifty years ago. With state-of-the-art circuitry and time-honored circuit designs, the AVR 325 is the perfect combination of the latest in digital audio technology, a quiet yet powerful analog amplifier in an elegant, easy-to-use package.

For Canadian model

This class B digital apparatus complies with Canadian ICES-003.
For models having a power cord with a polarized plug:
CAUTION: To prevent electric shock, match wide blade of plug to wide slot, fully insert.

Modèle pour les Canadien

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
Sur les modèles dont la fiche est polarisee:
ATTENTION: Pour éviter les chocs électriques, introduire la lame la plus large de la fiche dans la borne correspondante de la prise et pousser jusqu'au fond.

- A wide range of digital and matrix surround modes, including Dolby® Digital, Dolby Digital EX, Dolby Pro Logic® II, DTS®, DTS-ES® Discrete and Matrix, and DTS Neo:6®
- Seven channels of high-current amplification with two channels assignable to either surround back or multiroom applications
- Harman Kardon's exclusive Logic 7® processing, available for the first time with both 7.1 and 5.1 processing in a variety of modes, and two modes of VMAx®
- MP3 decoding for use with computers and digital audio players
- EzSet™ remote automatically sets output levels for optimum performance
- High-bandwidth, HDTV-compatible component video switching
- Discrete front-panel coaxial and optical digital inputs for easy connection to portable digital devices and the latest video game consoles
- Extensive bass management options, including three separate crossover groupings
- On-screen menu and display system
- Extensive multiroom options, including a standard Zone II remote, assignable amplifier channels and A-BUS Ready® capability for listening to a separate source in a remote zone

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: To prevent electric shock, do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Important Safety Information

Verify Line Voltage Before Use

Your AVR 325 has been designed for use with 120-volt AC current. Connection to a line voltage other than that for which it is intended can create a safety and fire hazard and may damage the unit.

If you have any questions about the voltage requirements for your specific model, or about the line voltage in your area, contact your selling dealer before plugging the unit into a wall outlet.

Do Not Use Extension Cords

To avoid safety hazards, use only the power cord attached to your unit. We do not recommend that extension cords be used with this product. As with all electrical devices, do not run power cords under rugs or carpets or place heavy objects on them. Damaged power cords should be replaced immediately by an authorized service center with a cord meeting factory specifications.

Handle the AC Power Cord Gently

When disconnecting the power cord from an AC outlet, always pull the plug; never pull the cord. If you do not intend to use the unit for any considerable length of time, disconnect the plug from the AC outlet.

Do Not Open the Cabinet

There are no user-serviceable components inside this product. Opening the cabinet may present a shock hazard, and any modification to the product will void your guarantee. If water or any metal object such as a paper clip, wire or a staple accidentally falls inside the unit, disconnect it from the AC power source immediately, and consult an authorized service center.

CATV or Antenna Grounding

If an outside antenna or cable system is connected to this product, be certain that it is grounded so as to provide some protection against voltage surges and static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes and requirements of the grounding electrode.

NOTE TO CATV SYSTEM INSTALLER: This reminder is provided to call the CATV (Cable TV) system installer's attention to article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as possible.

Installation Location

- To ensure proper operation and to avoid the potential for safety hazards, place the unit on a firm and level surface. When placing the unit on a shelf, be certain that the shelf and any mounting hardware can support the weight of the product.
- Make certain that proper space is provided both above and below the unit for ventilation. If this product will be installed in a cabinet or other enclosed area, make certain that there is sufficient air movement within the cabinet. Under some circumstances a fan may be required.
- Do not place the unit directly on a carpeted surface.
- Avoid installation in extremely hot or cold locations, or in an area that is exposed to direct sunlight or heating equipment.
- Avoid moist or humid locations.
- Do not obstruct the ventilation slots on the top of the unit, or place objects directly over them.
- Due to the weight of the AVR 325 and the heat generated by the amplifiers, there is the remote possibility that the rubber padding on the bottom of the unit's feet may leave marks on certain wood or veneer materials. Use caution when placing the unit on soft woods or other materials that may be damaged by heat or heavy objects.

Cleaning

When the unit gets dirty, wipe it with a clean, soft, dry cloth. If necessary, wipe it with a soft cloth dampened with mild soapy water, then a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, as they may damage the finish of metal parts. Avoid spraying insecticide near the unit.

Moving the Unit

Before moving the unit, be certain to disconnect any interconnection cords with other components, and make certain that you disconnect the unit from the AC outlet.

Important Information for the User

This equipment has been tested and found to comply with the limits for a Class-B digital device, pursuant to Part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

NOTE: Changes or modifications may cause this unit to fail to comply with Part 15 of the FCC Rules and may void the user's authority to operate the equipment.

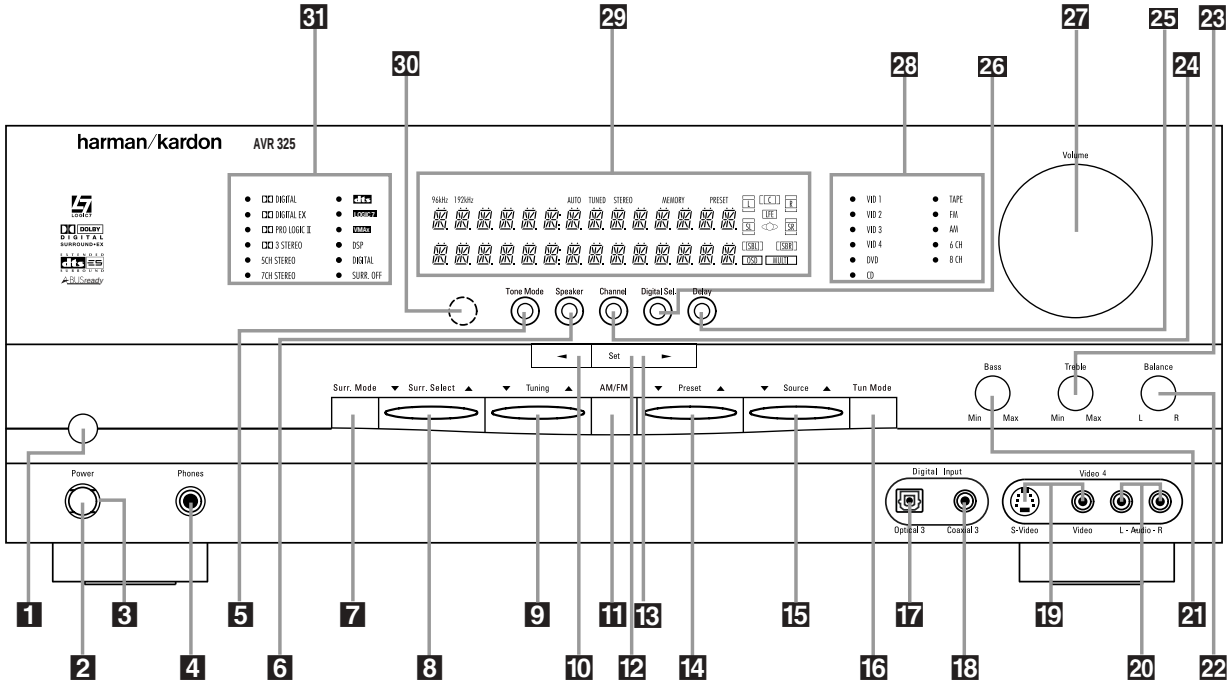
Unpacking

The carton and shipping materials used to protect your new receiver during shipment were specially designed to cushion it from shock and vibration. We suggest that you save the carton and packing materials for use in shipping if you move, or should the unit ever need repair.

To minimize the size of the carton in storage, you may wish to flatten it. This is done by carefully slitting the tape seams on the bottom and collapsing the carton. Other cardboard inserts may be stored in the same manner. Packing materials that cannot be collapsed should be saved along with the carton in a plastic bag.

If you do not wish to save the packaging materials, please note that the carton and other sections of the shipping protection are recyclable. Please respect the environment and discard those materials at a local recycling center.

At this time you should remove the protective plastic film from the front-panel lens. Leaving the film in place may affect the performance of your remote control.



1 Main Power Switch
2 System Power Control
3 Power Indicator
4 Headphone Jack
5 Tone Mode
6 Speaker Selector
7 Surround Mode Group Selector
8 Surround Mode Selector
9 Tuning Selector
10 ◀ Button
11 Tuner Band Selector
12 Set Button
13 ▶ Button
14 Preset Station Selector
15 Input Source Selector
16 Tuner Mode Selector
17 Optical 3 Digital Input
18 Coaxial 3 Digital Input
19 Video 4 Video Input Jacks
20 Video 4 Audio Input Jacks
21 Bass Control
22 Balance Control
23 Treble Control
24 Channel Adjust Selector
25 Delay Adjust Selector
26 Digital Input Selector
27 Volume Control
28 Input Indicators
29 Main Information Display
30 Remote Sensor Window
31 Surround Mode Indicators

1 Main Power Switch: Press this button to apply power to the AVR 325. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the amber Power Indicator **3** surrounding the System Power Control **2**. This button MUST be pressed in to operate the unit. To turn the unit off and prevent the use of the remote control, this switch should be pressed until it pops out from the front panel so that the word "OFF" may be read at the top of the switch.

NOTE: This switch is normally left in the "ON" position.

2 System Power Control: When the Main Power Switch **1** is "ON," press this button to turn on the AVR 325; press it again to turn the unit off. Note that the Power Indicator **3** surrounding the switch will turn green when the unit is on.

3 Power Indicator: This LED will be lit in amber when the unit is in the Standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn green.

4 Headphone Jack: This jack may be used to listen to the AVR 325's output through a pair of headphones. Be certain that the headphones have a standard 1/4" stereo phone plug. The main room speakers will automatically be turned off when the headphone jack is in use.

5 Tone Mode: This button controls the tone control settings, enabling adjustment of the bass and treble boost/cut or the removal of the tone controls from the signal path. The first press of the button displays a TONE IN message in the Main Information Display **29**. If you wish to set the tone controls to "flat," without any treble or bass alteration, press the ◀ or ▶ Selector Buttons **10** **13** so that TONE OUT appears in the Lower Display Line **B**.

6 Speaker Selector: Press this button to begin the process of configuring the AVR 325 for the type of speakers it is being used with. For information on configuring the speaker settings, see page 21.

7 Surround Mode Group Selector: Press this button to select the top-level group of surround modes. Each press of the button will select a major mode grouping in the following order:

→Dolby Modes → DTS Digital Modes → VMAx Modes → DSP Modes → Stereo Modes → Logic 7 Modes ┐

Once the button is pressed so that the name of the desired surround mode group appears in the on-screen display and in the Lower Display Line **B**, press the Surround Mode Selector **8** to cycle through the individual modes available. For example,

press this button to select Dolby modes, and then press the Surround Mode Selector 8 to choose from the various mode options.

8 Surround Mode Selector: Press this button to select from among the available surround mode options for the major mode group selected. The specific modes will vary based on the number of speakers available, the major mode group and whether the input source is digital or analog. For example, press the Surround Mode Group Selector 7 to select a major mode grouping such as Dolby or Logic 7, and then press this button to see the specific mode choices that are available. For more information on mode selection, see page 26.

9 Tuning Selector: Press the left side of the button to tune lower-frequency stations and the right side of the button to tune higher-frequency stations. When a station with a strong signal is reached, the TUNED Indicator I will be lit in the Main Information Display 29.

10 ◀ Button: When making system configuration changes using the front-panel controls, press this button to scroll left through the available choices for the option being adjusted.

11 Tuner Band Selector: Pressing this button will automatically switch the AVR 325 to the Tuner mode. Pressing it again will switch between the AM and FM frequency bands. (See page 30 for more information on the tuner.)

12 Set Button: When making system configuration changes using the front-panel controls, press this button to enter a setting into the unit's memory.

13 ▶ Button: When making system configuration changes using the front-panel controls, press this button to scroll right through the available choices for the option being adjusted.

14 Preset Station Selector: Press this button to scroll up or down through the list of stations that have been entered into the preset memory. (See pages 30 and 31 for more information on tuner programming.)

15 Input Source Selector: Press this button to change the input by scrolling up or down through the list of input sources.

16 Tuner Mode Selector: Press this button to select Auto or Manual tuning. When the button is pressed so that the AUTO Indicator J lights, the tuner will search for the next station with an acceptable signal when the Tuning Selector 9 21 E is pressed. When the button is pressed so that the AUTO Indicator J is not lit, each press of the Tuning Selector 9 21 E will increase the frequency. (See page 30 for more information on using the tuner.) This button may also be used to switch between Stereo and Mono modes for FM radio reception. When weak reception is encountered, press the button until the Stereo Indicator H goes out to switch to Mono reception. Press and hold again to switch back to Stereo mode. (See page 30 for more information on using the tuner.)

17 Optical 3 Digital Input: Connect the optical digital output of an audio or video product to this jack.

18 Coaxial 3 Digital Input: Connect the coaxial digital input of a digital audio product such as a portable audio player or video game to this jack.

19 Video 4 Video Input Jacks: These jacks may be used to connect the video play/out jacks of a video game or portable video product such as a camcorder, video game or digital still camera to your system.

20 Video 4 Audio Input Jacks: These audio/video jacks may be used for connection to the audio play/out jacks of a video game or portable audio/video product such as a camcorder or portable audio player.

21 Bass Control: Use this control to boost or reduce the low-frequency output of the left/right front channels by as much as ±10dB. Set this control as you find suitable to adjust to your specific taste or room acoustics.

22 Balance Control: Use this control to change the relative volume for the front left/right channels.

NOTE: When multichannel surround modes are in use, this control should be at the midpoint, or "12 o'clock," position for proper operation.

23 Treble Control: Use this control to boost or reduce the high-frequency output of the left/right front channels by as much as ±10dB. Set this control as you find suitable to adjust to your specific taste or room acoustics.

24 Channel Adjust Selector: Press the button to begin the process of adjusting the channel level outputs using the source currently playing through your AVR. For complete information on adjusting the channel output level, see page 31.

25 Delay Adjust Selector: Press this button to begin the process of adjusting the delay settings for Dolby surround modes. See page 23 for more information on delay adjustments.

26 Digital Input Selector: Press this button to begin the process of selecting a digital source for use with the currently selected input. Once the button has been pressed, use the ◀ or ▶ Buttons 10 13 to choose the desired input and then press the Set Button 12 to enter the setting into the unit's memory. See page 27 for more information on digital audio.

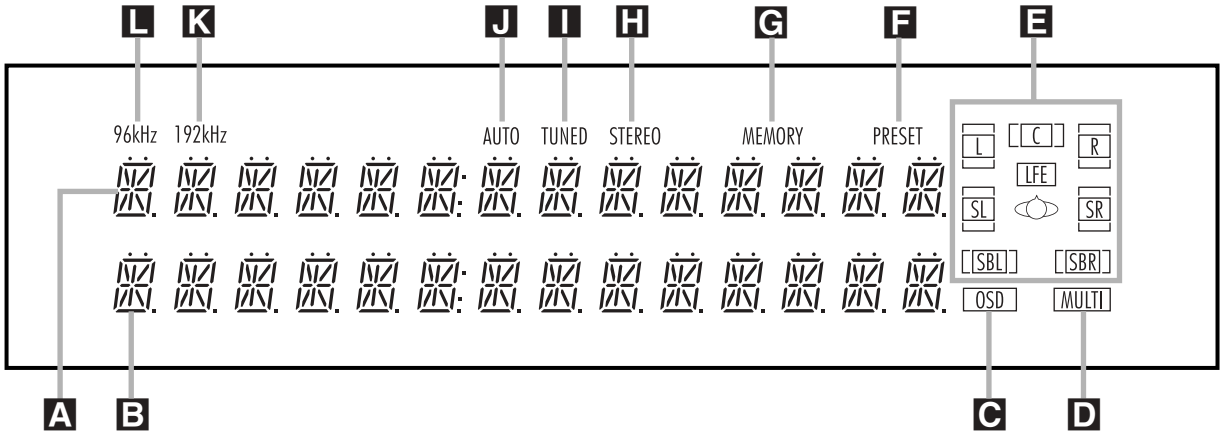
27 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR 325 is muted, adjusting volume control will automatically release the unit from the silenced condition.

28 Input Indicators: A green LED will light to the left of the input that is currently the input source for the AVR 325.

29 Main Information Display: This display delivers messages and status indications to help you operate the receiver. (See page 7 for a complete explanation of the Information Display.)

30 Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it unless an external remote sensor is installed.

31 Surround Mode Indicators: These LEDS will light to show the surround mode and digital bitstream in use. Note that depending on the specific combination of input sources and surround mode selected, more than one indicator may light. (See page 28 for more information.)



A Upper Display Line
B Lower Display Line
C OSD Indicator
D Multiroom Indicator
E Speaker/Channel Input Indicators
F PRESET Indicator
G MEMORY Indicator
H STEREO Indicator
I TUNED Indicator
J AUTO Indicator
K 192kHz Indicator
L 96kHz Indicator

A Upper Display Line: Depending on the unit's status, a variety of messages will appear here. In normal operation, the current audio and video input source information will appear on this line.

B Lower Display Line: Depending on the unit's status, a variety of messages will appear here. In normal operation, the current surround mode name will appear on this line.

C OSD Indicator: When the OSD system is in use, this indicator lights to remind you that the other indicators in this display do not function when the On-Screen Display is being used.

D Multiroom Indicator: This indicator lights when the multiroom system is active. It will remain lit when the multiroom system is in use even though the main room system is in the Standby mode and all other indicators are dark. (See page 34 for more information on the Multiroom system.)

E Speaker/Channel Input Indicators: These indicators are multipurpose, indicating either the speaker type selected for each channel or the incoming data-signal configuration. The left, center, right, right surround and left surround speaker indicators are composed of three boxes, while the subwoofer is a single box. The center box lights when a "Small" speaker is selected, and the two outer boxes light when "Large" speakers are selected. When none of the boxes are lit for the center, surround or subwoofer channels, no speaker has been selected for one of those positions. (See page 21 for more information on speaker setup.) The letters inside each of the center boxes display the active input channels. For standard analog inputs, only the L and R will light, indicating a stereo input. When a digital source is playing, the indicators will light to display the channels being received at the digital input. When the letters flash, the digital input has been interrupted. (See page 29 for more information on the channel indicators.)

F PRESET Indicator: This indicator lights when the tuner is in use to show that the present number for the current station being listened to appears in the Upper Display Line. (See page 30 for more information on tuner presets.)

G MEMORY Indicator: This indicator flashes when entering presets and other information into the tuner's memory.

H STEREO Indicator: This indicator lights when an FM station is being tuned in stereo.

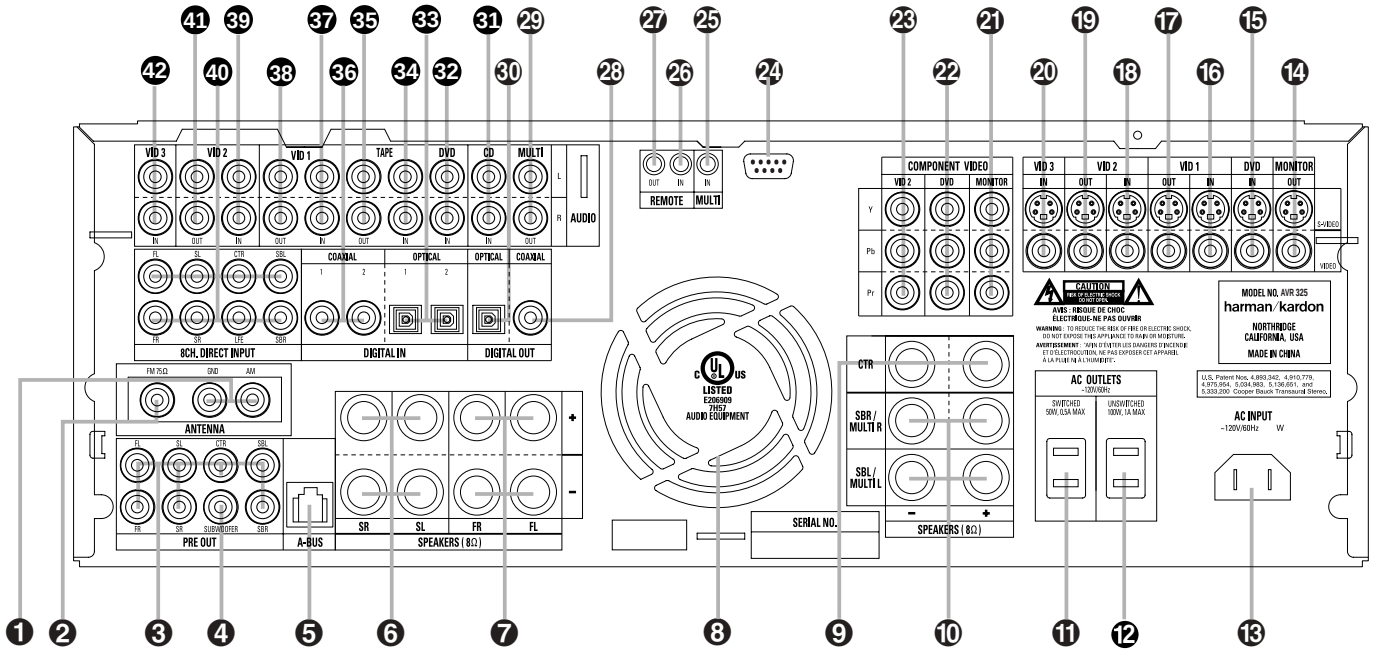
I TUNED Indicator: This indicator lights when a station is being received with sufficient signal strength to provide acceptable listening quality.

J AUTO Indicator: This indicator lights when the tuner's Auto mode is in use.

K 192kHz Indicator: This indicator lights when the input source has a 192kHz bit rate.

L 96kHz Indicator: This indicator lights when the input source has a 96kHz bit rate.

REAR-PANEL CONNECTIONS



1. AM Antenna
2. FM Antenna
3. Preamp Outputs
4. Subwoofer Output
5. A-BUS Connector
6. Surround Speaker Outputs
7. Front Speaker Outputs
8. Fan Vents
9. Center Speaker Outputs
10. Surround Back/Multiroom Speaker Outputs
11. Switched AC Accessory Outlet
12. Unswitched AC Accessory Outlet
13. AC Power Cord Jack
14. Video Monitor Outputs
15. DVD Video Inputs
16. Video 1 Video Inputs
17. Video 1 Video Outputs
18. Video 2 Video Inputs
19. Video 2 Video Outputs
20. Video 3 Video Inputs
21. Component Video Monitor Outputs
22. DVD Component Video Inputs
23. Video 2 Component Video Inputs
24. RS-232 Port
25. Multiroom IR Input
26. Remote IR Input
27. Remote IR Output
28. Coaxial Digital Audio Output
29. Multiroom Audio Outputs
30. Optical Digital Audio Output
31. CD Audio Inputs
32. DVD Audio Inputs
33. Optical Digital Audio Inputs
34. Tape Inputs
35. Tape Outputs
36. Coaxial Digital Audio Inputs
37. Video 1 Audio Inputs
38. Video 1 Audio Outputs
39. Video 2 Audio Inputs
40. 8-Channel Direct Inputs
41. Video 2 Audio Outputs
42. Video 3 Audio Inputs

NOTE: To assist in making the correct connections for multichannel input, output and speaker connections, all connection jacks and terminals are color-coded in conformance with the latest CEA standards as follows:

Front Left: White
Front Right: Red
Center: Green
Surround Left: Blue
Surround Right: Gray
Surround Back Left: Brown
Surround Back Right: Tan
Subwoofer: Purple
Digital Audio: Orange
Composite Video: Yellow
Component Video "Y": Green
Component Video "Pr": Red
Component Video "Pb": Blue

1 AM Antenna: Connect the AM loop antenna supplied with the receiver to these terminals. If an external AM antenna is used, make connections to the AM and GND terminals in accordance with the instructions supplied with the antenna.

2 FM Antenna: Connect the supplied indoor (or an optional external) FM antenna to this terminal.

3 Preamp Outputs: Connect these jacks to an optional, external power amplifier for applications where higher power is desired.

4 Subwoofer Output: Connect this jack to the line-level input of a powered subwoofer. If an external subwoofer amplifier is used, connect this jack to the subwoofer amplifier input.

5 A-BUS Connector: Connect this jack to an optional A-BUS-certified remote room keypad or amplifier to extend the multiroom capabilities of your AVR 325. See page 34 for more information on A-BUS.

6 Surround Speaker Outputs: Connect these outputs to the matching + and – terminals on your surround channel speakers. In conformance with the new CEA color-code specification, the blue terminal is the

positive, or "+," terminal that should be connected to the red (+) terminal on the Surround Left speaker with older color-coding, while the gray terminal should be connected to the red (+) terminal on the Surround Right speaker with the older color-coding. Connect the black (–) terminal on the AVR to the matching black negative (–) terminals for each surround speaker. (See page 15 for more information on speaker polarity.)

❼ Front Speaker Outputs: Connect these outputs to the matching + or – terminals on your left and right speakers. When making speaker connections always make certain to maintain correct polarity by connecting the color-coded (white for front left and red for front right) (+) terminals on the AVR 325 to the red (+) terminals on the speakers and the black (–) terminals on the AVR 325 to the black (–) terminals on the speakers. See page 15 for more information on speaker polarity.

❽ Fan Vents: These ventilation holes are the output of the AVR 325's airflow system. To ensure proper operation of the unit and to avoid possible damage to delicate surfaces, make certain that these holes are not blocked and that there is at least three inches of open space between the vent holes and any wooden or fabric surface.

❾ Center Speaker Outputs: Connect these outputs to the matching + and – terminals on your center channel speaker. In conformance with the new CEA color-code specification, the green terminal is the positive, or "+," terminal that should be connected to the red (+) terminal on speakers with the older color-coding. Connect the black (–) terminal on the AVR to the black (–) terminal on your speaker. (See page 15 for more information on speaker polarity.)

❿ Surround Back/Multiroom Speaker Outputs: These speaker terminals are normally used to power the surround back left/surround back right speakers in a 7.1 channel system. However, they may also be used to power the speakers in a second zone, which will receive the output selected for a multiroom system. To change the output fed to these terminals from the default of the Surround Back speakers to the Multiroom Output, you must change a setting in the Advanced Menu of the OSD system. See page 32 for more information on configuring this speaker output. In normal surround system use, the brown and black terminals are the surround back left channel positive (+) and negative (–) connections and the tan and black terminals are the surround back right positive (+) and negative (–) terminals. For multiroom use, connect the brown and black SBL terminals to the red and black connections on the left remote zone speaker and connect the tan and black SBR terminals to the red and black terminals on the right remote zone speaker.

⓫ Switched AC Accessory Outlet: These outlets may be used to power any device you wish to have turned on when the AVR 325 is turned on with the System Power Control Button 2.

❶ Unswitched AC Accessory Outlet: This outlet may be used to power any AC device. The power will remain on at this outlet regardless of whether the AVR 325 is on or off.

NOTE: The total power consumption of all devices connected to the accessory outlets should not exceed 100 watts.

⓭ AC Power Cord Jack: Connect the AC power cord to this jack when the installation is complete. To ensure safe operation, use only the power cord supplied with the unit. If a replacement is required it must be of the same type and capacity.

⓮ Video Monitor Outputs: Connect these jacks to the composite or S-Video input of a TV monitor or video projector to view the on-screen menus and the output of any standard video source selected by the receiver's video switcher.

⓯ DVD Video Inputs: Connect the composite or S-Video outputs of a DVD player or other video source to these jacks.

⓰ Video 1 Video Inputs: Connect the composite or S-Video PLAY/OUT jacks of a VCR or other video source to these jacks.

⓱ Video 1 Video Outputs: Connect the composite or S-Video REC/IN jacks of a VCR or other video recording device such as a DVD recorder or PVR to these jacks.

⓲ Video 2 Video Inputs: Connect the composite or S-Video PLAY/OUT jacks of a VCR or other video source to these jacks.

⓳ Video 2 Video Outputs: Connect the composite or S-Video REC/IN jacks of a VCR or other video recording device such as a DVD recorder or PVR to these jacks.

⓴ Video 3 Video Inputs: Connect the composite or S-Video PLAY/OUT jacks of a VCR or other video source to these jacks.

㉑ Component Video Monitor Outputs: Connect these outputs to the component video inputs of a video projector or monitor. When a source connected to one of the Component Video Inputs ㉒㉓ is selected, the signal will be sent to these jacks.

㉒ DVD Component Video Inputs: Connect the Y/Pr/Pb component video outputs of a DVD player to these jacks.

㉓ Video 2 Component Video Inputs: Connect the Y/Pr/Pb component video outputs of an HDTV set-top converter, satellite receiver or other video source device with component video outputs to these jacks.

㉔ RS-232 Port: This jack is used to enable the AVR 325 to be controlled by an external computer or programmable remote system that uses RS-232 commands. Due to the complexity of RS-232 connections, we recommend that they be made by a trained and qualified custom installer. See page 16 for more information on the RS-232 control port.

㉕ Multiroom IR Input: Connect the output of an IR sensor in a remote room to this jack to operate the AVR 325's multiroom control system.

㉖ Remote IR Input: If the AVR 325's front-panel IR sensor is blocked due to cabinet doors or other obstructions, an external IR sensor may be used. Connect the output of the sensor to this jack.

㉗ Remote IR Output: This connection permits the IR sensor in the receiver to serve other remote controlled devices. Connect this jack to the "IR IN" jack on Harman Kardon (or other compatible) equipment.

㉘ Coaxial Digital Audio Output: Connect this jack to the coaxial digital input of a CD-R/RW, MiniDisc or other digital recorder.

㉙ Multiroom Audio Outputs: Connect these jacks to the optional external audio power amplifier and video distribution system that delivers the source selected for multizone distribution.

㉚ Optical Digital Audio Output: Connect this jack to the optical digital input connector on a CD-R/RW, MiniDisc or other digital recorder.

㉛ CD Audio Inputs: Connect these jacks to the analog audio output of a compact disc player or CD changer.

㉜ DVD Audio Inputs: Connect the left/right analog outputs of a DVD player or other audio source to these jacks.

㉝ Optical Digital Audio Inputs: Connect the optical digital output from a DVD player, HDTV receiver, the S/P-DIF output of a compatible computer sound card playing MP3 files or streams, LD player or CD player to these jacks. The signal may be a Dolby Digital signal, a DTS signal or a standard PCM digital source.

㉞ Tape Inputs: Connect these jacks to the PLAY/OUT jacks of an audio recorder.

㉟ Tape Outputs: Connect these jacks to the RECORD/INPUT jacks of an audio recorder.

㊱ Coaxial Digital Audio Inputs: Connect the coax digital output from a DVD player, HDTV receiver, the S/P-DIF output of a compatible computer sound card playing MP3 files or streams, LD player or CD player to these jacks. The signal may be a Dolby Digital signal, DTS signal or a standard PCM digital source. Do not connect the RF digital output of an LD player to these jacks.

㊲ Video 1 Audio Inputs: Connect the left/right PLAY/OUT audio output jacks on a VCR or other video source to these jacks.

㊳ Video 1 Audio Outputs: Connect the left/right REC/IN audio input jacks on a VCR or other video source to these jacks.

㊴ Video 2 Audio Inputs: Connect the left/right PLAY/OUT audio output jacks on a VCR or other video source to these jacks.

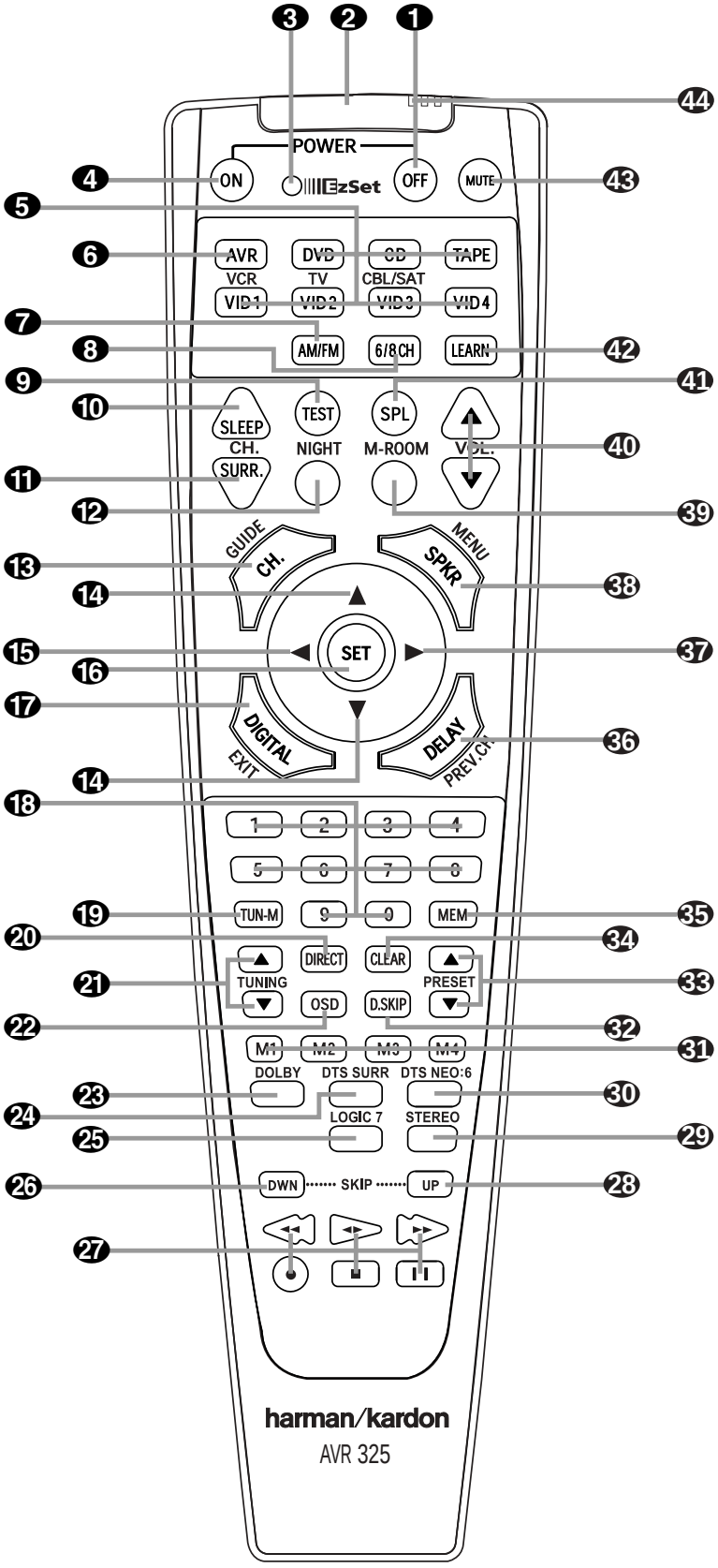
㊵ 8-Channel Direct Inputs: These jacks are used for connection to source devices such as DVD-Audio or SACD players with discrete analog outputs. Depending on the source device in use, all eight jacks may be used, though in many cases only connections to the front left/right, center, surround left/right and LFE (subwoofer input) jacks will be used for standard 5.1 audio signals.

㊶ Video 2 Audio Outputs: Connect the left/right REC/IN audio input jacks on a VCR or other video source to these jacks.

㊷ Video 3 Audio Inputs: Connect the left/right PLAY/OUT audio output jacks on a VCR, PVR, cable set-top, satellite receiver, HDTV receiver or other video source to these jacks.

1. Power Off Button
2. IR Transmitter Window
3. Program/SPL Indicator
4. Power On Button
5. Input Selectors
6. AVR Selector
7. AM/FM Tuner Select
8. 6-Channel/8-Channel Direct Input
9. Test Button
10. Sleep Button
11. Surround Mode Selector
12. Night Mode
13. Channel Select Button
14. ▲/▼ Buttons
15. ◄ Button
16. Set Button
17. Digital Select
18. Numeric Keys
19. Tuner Mode
20. Direct Button
21. Tuning Up/Down
22. OSD Button
23. Dolby Mode Selector
24. DTS Digital Mode Selector
25. Logic 7 Mode Select Button
26. Skip Down Button
27. Transport Controls
28. Skip Up Button
29. Stereo Mode Select Button
30. DTS Neo:6 Mode Select
31. Macro Buttons
32. Disc Skip Button
33. Preset Up/Down
34. Clear Button
35. Memory Button
36. Delay/Prev. Ch.
37. ► Button
38. Speaker Select
39. Multiroom
40. Volume Up/Down
41. SPL Selector
42. Learn Button
43. Mute
44. EzSet Sensor Microphone

NOTE: The function names shown here are each button's feature when used with the AVR 325. Most buttons have additional functions when used with other devices. See pages 40–41 for a list of these functions.



MAIN REMOTE CONTROL FUNCTIONS

IMPORTANT NOTE: The AVR 325's remote may be programmed to control up to eight devices, including the AVR 325. Before using the remote, it is important to remember to press the Input Selector Button ❺ that corresponds to the unit you wish to operate. In addition, the AVR 325's remote is shipped from the factory to operate the AVR 325 and most Harman Kardon CD or DVD players and cassette decks. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote. Before using the remote with other products, follow the instructions on pages 36–37 to program the proper codes for the products in your system.

It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Device Control Selectors. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR 325. (See page 40 for information about alternate functions for the remote's buttons.)

❶ Power Off Button: Press this button to place the AVR 325 or a selected device in the Standby mode. Note that this will turn off the main room functions, but if the Multiroom system is activated, it will continue to function.

❷ IR Transmitter Window: Point this window towards the AVR 325 when pressing buttons on the remote to make certain that infrared commands are properly received.

❸ Program/SPL Indicator: This three-color indicator is used to guide you through the process of programming the remote or learning commands from a remote into the AVR 325's remote code memory and it is also used as a level indicator when using the remote's EzSet capabilities. (See page 24 for more information on setting output levels, and see page 36 for information on programming the remote.)

❹ Power On Button: Press this button to turn on the power to a device selected by pressing one of the Input Selectors ❺.

❺ Input Selectors: Pressing one of these buttons will perform three actions at the same time. First, if the AVR 325 is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR 325. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the AVR Selector Button ❻ again to operate the AVR 325's functions with the remote.

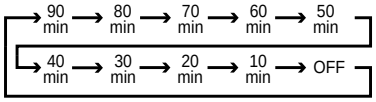
❻ AVR Selector: Pressing this button will switch the remote so that it will operate the AVR 325's functions. If the AVR 325 is in the Standby mode, it will also turn the AVR 325 on.

❼ AM/FM Tuner Select: Press this button to select the AVR 325's tuner as the listening choice. Pressing this button when the tuner is already in use will select between the AM and FM bands.

❽ 6-Channel/8-Channel Direct Input: Press this button to select the device connected to the 8-Channel Direct Inputs ㊵. (See page 26 for more information.)

❾ Test Button: Press this button to begin the sequence used to calibrate the AVR 325's output levels. (See page 24 for more information on calibrating the AVR 325.)

❿ Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 325 will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



This button is also used to change channels on your TV when the TV is selected.

When the AVR 325 remote is being programmed with the codes to operate another device, this button is also used in the "Auto Search" process. (See page 36 for more information on programming the remote.)

⓫ Surround Mode Selector: Press this button to cycle through the DSP, VMAx and Stereo surround modes such as Hall, Theater, VMAx Near and Far, and Surround Off. This button is also used to tune channels when the TV is selected using the device Input Selector ❺. When the AVR 325 remote is being programmed with the codes of another device, this button is also used in the "Auto Search" process. (See page 36 for more information on programming the remote.)

⓬ Night Mode: Press this button to activate the Night mode. This mode is available in specially encoded digital sources, and it preserves dialogue (center channel) intelligibility at low volume levels.

⓭ Channel Select Button: This button is used to start the process of setting the AVR 325's output levels to an external source. Once this button is pressed, use the ▲/▼ Buttons ⓮ to select the channel being adjusted, then press the Set Button ⓰, followed by the ▲/▼ Buttons ⓮ again, to change the level setting. (See page 31 for more information.)

⓮ ▲/▼ Buttons: These multipurpose buttons are used to change or scroll through items in the on-screen menus, make configuration settings such as digital inputs or delay timing, or to select surround modes. When changing a setting, first press the button for the function or setting to be changed (e.g., press the Surround Mode Selector ⓫ to select a sound field mode or the Digital Select Button ⓱ to change a digital input) and then press one of these buttons to scroll through the list of options or to increase or decrease a setting. The sections in this manual describing the individual features and functions contain specific information on using these buttons for each application.

⓯ ◀ Button: This button is used to change the menu selection or setting during some of the setup procedures for the AVR 325.

⓰ Set Button: This button is used to enter settings into the AVR 325's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

⓱ Digital Select: Press this button to assign one of the digital inputs ㉝ ㊱ ⓱⓲ to a source. (See page 27 for more information on using digital inputs.)

⓲ Numeric Keys: These buttons serve as a 10-button numeric keypad to enter tuner preset positions. They are also used to select channel numbers when TV, Cable or SAT has been selected on the remote, or to select track numbers on a CD, DVD or LD player, depending on how the remote has been programmed.

⓳ Tuner Mode: Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so that the AUTO Indicator Ⓙ goes out, pressing the Tuning Buttons ㉑⑨Ⓔ will move the frequency up or down in single-step increments. When the FM band is in use, pressing this button when a station's signal is weak will change to monaural reception. (See page 30 for more information.)

⓴ Direct Button: Press this button when the tuner is in use to start the sequence for direct entry of a station's frequency. After pressing the button, simply press the proper Numeric Keys ⓲ to select a station. (See page 30 for more information on the tuner.)

㉑ Tuning Up/Down: When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the Tuner Mode Button ⓳⓰ has been pressed so that the AUTO Indicator Ⓙ is illuminated, pressing and holding either of the buttons for three seconds will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the AUTO Indicator Ⓙ is NOT illuminated, pressing these buttons will tune stations in single-step increments. (See page 30 for more information.)

㉒ OSD Button: Press this button to activate the On-Screen Display (OSD) system used to set up or adjust the AVR 325's parameters.

㉓ Dolby Mode Selector: This button is used to select from among the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes or Dolby 3 Stereo. When a Dolby Digital-encoded source is in use, the Dolby Digital mode may also be selected. (See page 28 for the available Dolby surround mode options.)

㉔ DTS Digital Mode Selector: When a DTS-encoded digital source is selected, each press of this button will scroll through the available DTS modes. The specific choice of modes will vary according to whether or not the source material contains DTS-ES 6.1 Discrete encoding. When a DTS source is not in use, this button has no function. (See page 28 for the available DTS Digital options.)

㉕ Logic 7 Mode Select Button: Press this button to select from among the available Logic 7 surround modes. (See page 28 for the available Logic 7 options.)

㉖ Skip Down Button: This button does not have a direct function with the AVR 325, but when used with a compatibly programmed CD or DVD changer it will change to the previous disc in the changer or carousel.

㉗ Transport Controls: These buttons do not have any functions for the AVR 325, but they may be programmed for the forward/reverse play operation of a wide variety of CD or DVD players, and audio or video cassette recorders. (See page 38 for more information.)

㉘ Skip Up Button: This button does not have a direct function with the AVR 325, but when used with a compatibly programmed CD or DVD changer it will change the disc currently being played in the changer.

㉙ Stereo Mode Select Button: Press this button to select a stereo listening mode. The first press of the button places the AVR in a true, two-channel, left/right stereo mode with no surround processing. The next press selects either five-channel stereo or seven-channel stereo, depending on the speaker configuration.

㉚ DTS Neo:6 Mode Select: Press this button to select a DTS Neo:6 mode. These modes take a two-channel stereo- or matrix surround-encoded source and create a full five-, six- or seven-channel sound field. (See page 28 for the available DTS Neo:6 options.)

㉛ Macro Buttons: Press these buttons to store or recall a "Macro", which is a preprogrammed sequence of commands stored in the remote. (See page 37 for more information on storing and recalling macros.)

㉜ Disc Skip Buttons: This button has no direct function for the AVR 325 but is most often used to change to the next disc in a CD or DVD player when the remote is programmed for that type of device. (See page 38 for more information on using the remote with products other than the AVR 325.)

㉝ Preset Up/Down: When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR 325's memory. When some source devices, such as CD players, VCRs and cassette decks, are selected using the device Input Selectors ❺, these buttons may function as Chapter Step or Track Advance.

㉞ Clear Button: Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency.

㉟ Memory Button: Press this button to enter a radio station into the AVR 325's preset memory. Once the MEMORY Indicator G flashes, you have five seconds to enter a preset memory location using the Numeric Keys ⓲. (See page 30 for more information.)

㊱ Delay/Prev Ch.: Press this button to begin the process for setting the delay times used by the AVR 325 when processing surround sound. After pressing this button, the delay times are entered by pressing the Set Button ⓰ and then using the ▲/▼ Buttons ⓮ to change the setting. Press the Set Button ⓰ again to complete the process. (See page 23 for more information.)

㊲ ▶ Button: Press this button to change a setting or selection when configuring many of the AVR 325's settings.

㊳ Speaker Select: Press this button to begin the process of configuring the AVR 325's bass management system for use with the type of speakers used in your system. Once the button has been pressed, use the ▲/▼ Buttons ⓮ to select the channel you wish to set up. Press the Set Button ⓰ and then select another channel to configure. When all adjustments have been completed, press the Set Button ⓰ twice to exit the settings and return to normal operation. (See page 21 for more information.)

㊴ Multiroom: Press this button to activate the multiroom system or to begin the process of changing the input or volume level for the second zone. (See page 34 for more information on the Multiroom system.)

㊵ Volume Up/Down: Press these buttons to raise or lower the system volume.

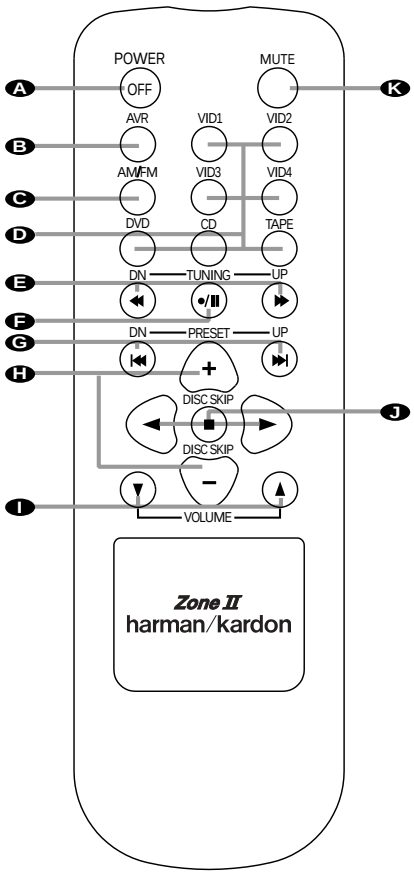
㊶ SPL Selector: This button activates the AVR 325's EzSet function to quickly and accurately calibrate the AVR 325's output levels. Press and hold the button for three seconds and then release it. Press the "5" or "7" Numeric Key ⓲ to indicate whether you are using a 5.1-channel or a 6.1/7.1-channel speaker system with the AVR 325. The test tone will begin circulating, and the Program/SPL Indicator ❸ will change colors. During this sequence, EzSet will automatically adjust the output levels for all channels until they are equal, as shown by the Program/SPL Indicator ❸ lighting green for each channel. Press this button again when the adjustment is complete to turn off the test tone. (See page 24 for more information on EzSet.)

㊷ Learn Button: Press this button to begin the process of "learning" the codes from another product's remote into the AVR 325's remote. (See page 36 for more information on using the remote's learning function.)

㊸ Mute: Press this button to momentarily silence the AVR 325 or TV set being controlled, depending on which device has been selected. When the AVR 325 remote is being programmed to operate another device, this button is pressed with the Input Selector Button ❺ to begin the programming process. (See page 36 for more information on programming the remote.)

㊹ EzSet Sensor Microphone: The sensor microphone for the EzSet microphone is behind these slots. When using the remote to calibrate speaker output levels using EzSet, be sure that you do not hold the remote in a way that covers these slots. (See page 24 for more information on using EzSet.)

ZONE II REMOTE CONTROL FUNCTIONS



- Ⓐ Power Off
- Ⓑ AVR Selector
- Ⓒ AM/FM Tuner Select
- Ⓓ Input Selectors
- Ⓔ Tuning Up/Down – Fast Play
- Ⓕ Record/Pause
- Ⓖ Preset Up/Down – Track Skip
- Ⓗ Disc Skip
- Ⓘ Volume Up/Down
- Ⓙ Play Forward/Reverse/Stop
- ⬬ Mute

Ⓐ Power Off: When used in the room where the AVR 325 is located, press this button to place the unit in Standby. When it is used in a remote room with a sensor that is connected to the Multiroom IR Input ㉕ jack, this button turns the Multiroom system on and off.

Ⓑ AVR Selector: Press this button to turn on the AVR 325. The input in use when the unit was last on will be selected.

Ⓒ AM/FM Tuner Select: Press this button to select the Tuner as the input to the Multiroom system. Press it again to change between the AM and FM bands.

Ⓓ Input Selectors: When the AVR 325 is off, press one of these buttons to select a specific input and turn the unit on. When the unit is already in use, pressing one of these buttons will change the input.

Ⓔ Tuning Up/Down – Fast Play: When this remote is used in the same room as the AVR 325, these buttons may be used to change the frequency of the tuner. These buttons may also control the Fast Play or Fast Reverse functions of compatible Harman Kardon CD, DVD or cassette decks in the same room, or from a remote room when an IR link is connected to the AVR 325.

Ⓕ Record/Pause: Press this button to activate the Record or Pause function on compatible Harman Kardon CD, DVD or cassette deck products.

Ⓖ Preset Up/Down – Track Skip: When the AVR 325's tuner is selected as the input source, these buttons will move up or down through the list of stations that have been stored in the preset memory. When a CD or DVD changer or player is selected, these buttons activate the Forward or Reverse Track or Chapter Skip functions.

Ⓗ Disc Skip: Press these buttons to change discs on compatible Harman Kardon CD or DVD changers or players.

Ⓘ Volume Up/Down: When used in the room where the AVR 325 is located, press this button to raise or lower the volume in that room. When used in a remote room with a sensor that is connected to the Multiroom IR Input ㉕ jack, this button will raise or lower the volume in the remote room.

Ⓙ Play Forward/Reverse/Stop: Press these buttons to control compatible Harman Kardon CD, DVD or cassette players.

⬬ Mute: When used in the room where the AVR 325 is located, press this button to temporarily silence the unit. When it is used in a remote room with a sensor that is connected to the Multiroom IR Input ㉕ jack, this button will temporarily silence the feed to the remote room only. Press the button again to return to the previous volume level.

NOTE: The Zone II remote may be used in either the same room where the AVR 325 is located, or it may be used in a separate room with an optional infrared sensor that is connected to the AVR 325's Multiroom IR Input ㉕ jack. When it is used in the same room as the AVR 325, it will control the functions of the AVR 325 or any compatible Harman Kardon products in that room. When it is used in a separate room via a sensor connected to the Multiroom IR Input ㉕ jack, the buttons for Power, Input Source, Volume and Mute will control the source and volume for the second zone, as connected to the Multiroom Audio Output ㉙ jacks. (See page 34 for complete information on using the Multiroom system.)

System Installation

After unpacking the unit, locating it in a place with adequate ventilation and placing it on a solid surface capable of supporting its weight, you will need to make the connections to your audio and video equipment.

IMPORTANT NOTE: For your personal safety and to avoid possible damage to your equipment and speakers, it is always a good practice to turn off and unplug the AVR and ALL source equipment from the AC output before making any audio or video system connections.

Audio Equipment Connections

We recommend that you use high-quality interconnect cables when making connections to source equipment and recorders to preserve the integrity of the signals.

1. Connect the analog output of a CD player to the CD Audio Inputs ㉛.

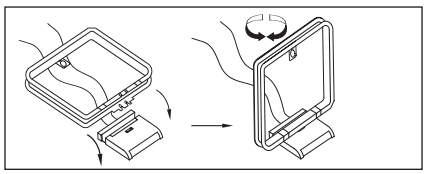
NOTE: When the CD player has both fixed and variable audio outputs, it is best to use the fixed output unless you find that the input to the receiver is so low that the sound is noisy, or so high that it is distorted.

2. Connect the analog Play/Out jacks of a cassette deck, MD, CD-R or other audio recorder to the Tape Input Jacks ㉞. Connect the analog Record/In jacks on the recorder to the Tape Output Jacks ㉟ on the AVR 325.

3. Connect the output of any digital sources such as a CD or DVD changer or player, advanced video game, a digital satellite receiver, HDTV tuner or digital cable set-top box or the output of a compatible computer sound card to the Optical and Coaxial Digital Audio Inputs ㉝ ㊱ 17 18.

4. Connect the coaxial or optical Digital Audio Outputs ㉘㉚ on the rear panel of the AVR 325 to the matching digital input connections on a CD-R or MiniDisc recorder.

5. Assemble the AM Loop Antenna supplied with the unit. Connect it to the AM and GND Screw Terminals ❶.



6. Connect the supplied FM antenna to the FM (75-ohm) Connection ❷. The FM antenna may be an external roof antenna, an inside powered or wire-lead antenna or a connection from a cable TV system. If the antenna or connection uses 300-ohm twin-lead cable, you must use the 300-ohm-to-75-ohm adapter supplied with the unit to make the connection.

7. Connect the front, center, surround and surround back speaker outputs ❻❼❾❿ to the respective speakers.

To ensure that all the audio signals are carried to your speakers without loss of clarity or resolution, we suggest that you use high-quality speaker cable. Many brands of cable are available and the choice of cable may be influenced by the distance between your speakers and the receiver, the type of speakers you use, personal preferences and other factors. Your dealer or installer is a valuable resource to consult in selecting the proper cable.

Regardless of the brand of cable selected, we recommend that you use a cable constructed of multistrand copper with a gauge of 14 or smaller. Remember that in specifying cable, the lower the number, the thicker the cable.

Cable with a gauge of 16 may be used for short runs of less than 10 feet. We do not recommend that you use cables with an AWG equivalent of 18 or higher, due to the power loss and degradation in performance that will occur.

Cables that are run inside walls should have the appropriate markings to indicate listing with UL, CSA or other appropriate testing agency standards. Questions about running cables inside walls should be referred to your installer or a licensed electrician who is familiar with the NEC and/or the applicable local building codes in your area.

When connecting wires to the speakers, be certain to observe proper polarity. Note that the positive (+) terminal of each speaker connection now carries a specific color code, as noted on page 8. However, most speakers still use a red terminal for the positive (+) connection. Connect the "negative" or "black" wire to the same terminal on both the receiver and the speaker.

NOTE: While most speaker manufacturers adhere to an industry convention of using black terminals for negative and red ones for positive, some may vary from this configuration. To ensure proper phase and optimal performance, consult the identification plate on your speaker or the speaker's manual to verify polarity. If you do not know the polarity of your speaker, ask your dealer for advice before proceeding, or consult the speaker's manufacturer.

We also recommend that the length of cable used to connect speaker pairs be identical. For example, use the same length piece of cable to connect the front-left and front-right or surround-left and surround-right speakers, even if the speakers are a different distance from the AVR 325.

8. Connections to a subwoofer are normally made via a line-level audio connection from the Subwoofer Output ❹ to the line-level input of a subwoofer with a built-in amplifier. When a passive subwoofer is used, the connection first goes to a power amplifier, which will be connected to one or more subwoofer speakers. If you are using a powered subwoofer that does not have line-level input connections, follow the instructions furnished with the speaker for connection information.

9. If an external multichannel audio source with 5.1 outputs such as an external digital processor/decoder, DVD-Audio or SACD player is used, connect the outputs of that device to the 8-Channel Direct Inputs ㊵.

Video Equipment Connections

Video equipment is connected in the same manner as audio components. Again, the use of high-quality interconnect cables is recommended to preserve signal quality.

1. Connect a VCR's or other video source's audio and video Play/Out jacks to the Video 1/Video 2 Audio and Video Input Jacks ⑯⑱㊲㊴ on the rear panel. The Audio and Video Record/In jacks on the VCR should be connected to the Video 1/Video 2 Audio and Video Output Jacks ⑰⑲㊳㊶ on the AVR 325.

2. Connect the analog audio and video outputs of a satellite receiver, cable TV converter, television set or any other video source to the Video 3 Audio and Video Input Jacks ⑳㊷ .

3. Connect the analog audio and video outputs of a DVD or laser disc player to the DVD Audio and Video Inputs ⑮㉜.

4. Connect the digital audio outputs of a DVD player, satellite receiver, cable box or HDTV converter to the appropriate Optical or Coaxial Digital Inputs ㉝ ㊱ 17 18.

5. Connect the Video Monitor Output ⑭ jacks on the receiver to the composite or S-Video input of your television monitor or video projector.

6. If your DVD player and monitor both have component video connections, connect the component outputs of the DVD player to the DVD Component Video Inputs ㉒. Even when component video connections are used, the audio connections should still be made to either the analog DVD Audio Inputs ㉜ or any of the Optical or Coaxial Digital Input Jacks ㉝ ㊱.

7. If other devices with component video outputs are available, connect it to the Video 2 Component Video Inputs ㉓. The audio connections for this

device should be made to either the Video 2 Audio Inputs 39 or any of the Optical or Coaxial Digital Input Jacks 33 36.

8. If the component video inputs are used, connect the Component Video Monitor Outputs 21 to the component video inputs of your TV, projector or display device.

9. If you have a camcorder, video game or other audio/video device that is connected to the AVR on a temporary rather than permanent basis, connect the audio, video and digital audio outputs of that device to the Front-Panel Inputs 17 18 19 20. A device connected here is selected as the Video 4 input, and the digital inputs must be assigned to the Video 4 input. (See page 19 for more information on input configuration.)

Video Connection Notes:

- When the component video jacks are used, the on-screen menus are not visible and you must switch to the standard composite or S-Video input on your TV to view them.
- The AVR 325 will accept either standard composite, S-Video or Y/Pr/Pb component video signals. However, it will not convert composite or S signals to component video.
- Component and composite video signals may only be viewed in their native formats.

System and Power Connections

The AVR 325 is designed for flexible use with multi-room systems, external control components and power amplifiers.

Main Room Remote Control Extension

If the receiver is placed behind a solid or smoked glass cabinet door, the obstruction may prevent the remote sensor from receiving commands. In this event, an optional remote sensor may be used. Connect the output of the remote sensor to the Remote IR Input 26 jack.

If other components are also prevented from receiving remote commands, only one sensor is needed. Simply use this unit's sensor or a remote eye by running a connection from the Remote IR Output 27 jack to the Remote IR Input jack on Harman Kardon or other compatible equipment.

Multiroom IR Link

The remote room IR receiver should be connected to the AVR 325 via standard coaxial cable. Plug the IR connection cable into the Multiroom IR Input 25 jack on the AVR 325's rear panel.

If other Harman Kardon compatible source equipment is part of the main room installation, the Remote IR Output 27 jack on the rear panel should be connected to the IR IN jack on source equipment. This will enable the remote room location to control source equipment functions.

NOTE: All remotely controlled components must be linked together in a "daisy chain". Connect the IR OUT jack of one unit to the IR IN of the next to establish this chain.

Multiroom Connections

The AVR 325 is equipped with multizone capabilities that allow it to send a separate audio source to the remote zone from the one selected for use in the main room.

Depending on your system's requirement, three options are available for audio connection:

Option 1: Use high-quality, shielded audio interconnect cable from the AVR 325's location to the remote room. In the remote room, connect the interconnect cable to a stereo power amplifier. The amplifier will be connected to the room's speakers. At the AVR 325, plug the audio interconnect cables into the Multiroom Audio Output 29 jacks on the AVR 325's rear panel.

Option 2: Connect the Multiroom Audio Output 29 jacks on the AVR 325 to the inputs of an optional stereo power amplifier. Run high-quality speaker wire from the amplifier to the speakers in the remote room.

Option 3: Taking advantage of the AVR 325's built-in seven-channel amplifier, it is possible to use two of the amplifier channels to power speakers in the remote room. When using this option you will not be able to use the full 7.1-channel capabilities of the AVR 325 in the main listening room, but you will be able to add another listening room without additional external power amplifiers. To use the internal amplifiers to power a remote zone, connect the speakers for the remote room location to the Surround Back/ Multiroom Speaker Outputs 10. Before using the remote room you will need to configure the amplifiers for surround operation by changing a setting in the Advanced Select menu, following the instructions shown on page 32.

NOTE: For all options, you may connect an optional IR sensor in the remote room to the AVR 325 via an appropriate cable. Connect the sensor's cable to the Multiroom IR Input 25 on the AVR 325 and use the Zone II remote to control the room volume. Alternatively, you may install an optional volume control between the output of the amplifiers and the speakers.

A-BUS® Installation Connections

The AVR 325 is among the very few receivers available today that offer built-in A-BUS Ready® operation. When used with an optional A-BUS keypad or control module, you have all the benefits of remote zone operation without the need for an external power amplifier.

To use the AVR 325 with an approved A-BUS product, simply connect the keypad or module that is in the remote room to the AVR 325 using standard Category 5 wiring that is properly rated for the in-wall use specific to the installation. Terminate the wiring at the receiver end to a standard RJ-45 jack in compliance with the instructions furnished with the A-BUS module.

No further installation or adjustment is needed, as the A-BUS connector on the AVR 325 routes the signals in and out of the keypad to their proper destination for power, signal source and control. The output fed to the A-BUS jack is determined by the AVR 325's multi-room system, and the menus may be used as is.

RS-232 Connections

The AVR 325 includes an RS-232 serial port connection that may be used to control the unit via compatible optional, external keypads or control systems. The physical connection to the AVR 325 from the control device is a standard D-9 connection, but to ensure compatible and proper operation, specific software commands and pin wiring schemes are required. Due to the complexity of RS-232 connections, we recommend that they be made only by trained installers familiar with their use. To obtain additional information on the use of the AVR 325 with RS-232 control, please contact Harman Kardon's customer service department or consult our Web site at www.harmankardon.com.

AC Power Connections

This unit is equipped with two accessory AC outlets. They may be used to power accessory devices, but they should not be used with high-current-draw equipment such as power amplifiers. The total power draw to each outlet may not exceed 100 watts.

The Switched AC Accessory Outlet 11 will receive power only when the unit is on. This is recommended for devices that have no power switch or a mechanical power switch that may be left in the "ON" position.

NOTE: Many audio and video products go into a Standby mode when they are used with switched outlets, and cannot be fully turned on using the outlet alone without a remote control command.

The Unswitched AC Accessory Outlet 1 will receive power as long as the unit is plugged into a powered AC outlet.

The AVR 325 features a removable power cord that allows wires to be run to a complex installation so that the unit itself need not be installed until it is ready for connection. When all connections described above have been made, connect the AC power cord to the AC Power Cord Jack ⓭.

The AVR 325 draws significantly more current than other household devices, such as computers, that use removable power cords. For that reason, it is important that only the cord supplied with the unit (or a direct replacement of identical capacity) be used.

Once the power cord is connected, you are almost ready to enjoy the AVR 325's incredible power and fidelity!

When all audio, video and system connections have been made, there are a few configuration adjustments that must be made. A few minutes spent to correctly configure and calibrate the unit will greatly add to your listening experience.

Speaker Selection and Placement

The placement of speakers in a multichannel home theater system can have a noticeable impact on the quality of sound reproduced.

No matter which type or brand of speakers is used, the same model or brand of speaker should be used for the left front, center and right front speakers. This creates a seamless front soundstage and eliminates the possibility of distracting sonic disturbances that occur when a sound moves across mismatched front-channel speakers.

Speaker Placement

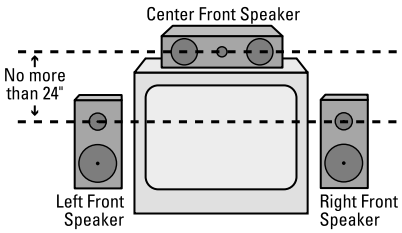
Depending on the type of center channel speaker in use and your viewing device, place the center speaker either directly above or below your TV, or in the center behind a perforated front projection screen.

Once the center channel speaker is installed, position the front left and front right speakers so that they are as far away from one another as the center channel speaker is from the preferred listening position. Ideally, the front channel speakers should be placed so that their tweeters are no more than 24" above or below the tweeter in the center channel speaker.

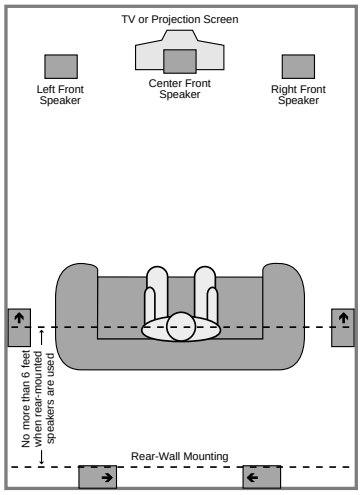
Depending on the specifics of your room acoustics and the type of speakers in use, you may find that imaging is improved by moving the left front and right front speakers slightly forward of the center channel speaker. If possible, adjust all front loudspeakers so that they are aimed at ear height when you are seated in the listening position.

Using these guidelines, you'll find that it takes some experimentation to find the correct location for the front speakers in your particular installation. Don't be afraid to move things around until the system sounds correct. Optimize your speakers so that audio transitions across the front of the room sound smooth, and sounds from all speakers appear to arrive at the listening position at the same time (without delay from the center speaker compared to the left and right speakers).

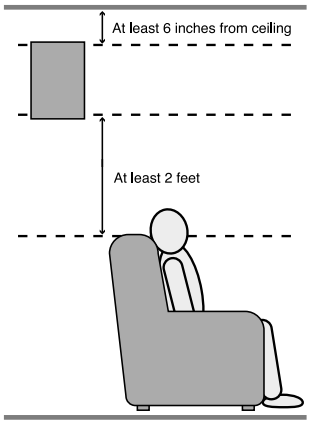
When the AVR 325 is used in 5.1-channel operation, the preferred location for surround speakers is on the side walls of the room, at or slightly behind the listening position. In a 7.1-channel system, both side surround and back surround speakers are required. The center of the speaker should face into the room. The



A) Front-Channel Speaker Installation With Direct-View TV Sets or Rear-Screen Projectors


TV or Projection Screen
Left Front Speaker
Center Front Speaker
Right Front Speaker
No more than 6 feet when rear-mounted speakers are used
Rear-Wall Mounting

B) Rear speaker mounting is an alternate location for 5.1 systems. It is required for 7.1 operation.



speakers should be located so that the bottom of the cabinet is at least two feet higher than the listeners' ears when the listeners are seated in the desired area.

Rear surround speakers are required when a full 7.1-channel system is installed, and they may also be used in 5.1-channel systems as an alternative mounting position when it is not practical to place the main surround speakers on the sides of the room. Speakers may be placed on a rear wall, behind the listening position. As with the side speakers, rear surrounds should be located so that the bottom of the cabinet is at least two feet higher than the listeners' ears. The speakers should be no more than six feet behind the rear of the seating area.

If dipole-type speakers are used on either the side or rear walls of the room, please note that if there are arrows on the speakers they should face the front of the room for the side speakers, or toward the center of the wall for the rear speakers.

Subwoofers produce nondirectional sound, so they may be placed almost anywhere in a room. Actual placement should be based on room size and shape and the type of subwoofer used. One method of finding the optimal location for a subwoofer is to begin by placing it in the front of the room, about six inches from a wall, or near the front corner of the room. Another method is to temporarily place the subwoofer at your normal listening position, and then walk around the room until you find a spot where the subwoofer sounds best. Place the subwoofer in that spot. You should also follow the instructions of the subwoofer's manufacturer, or you may wish to experiment with the best location for a subwoofer in your listening room.

System Setup

Once the speakers have been placed in the room and connected, the remaining steps in the setup process are to program the AVR 325's bass management system for the type of speakers used in your system, calibrate the output levels, and set the delay times used by the surround sound processor.

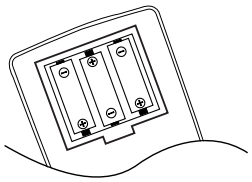
You are now ready to power up the AVR 325 to begin these final adjustments.

1. Make certain that the AC power cord is firmly inserted into the AC Power Cord Jack ⓭ and plug the cord into an unswitched AC outlet. To maintain the unit's safety rating, DO NOT substitute the power cord for one with lower current capacity.

2. Press the Main Power Switch **1** in until it latches and the word "OFF" on the top of the switch disappears inside the front panel. Note that the Power Indicator **3** will turn amber, indicating that the unit is in the Standby mode.

3. Remove the protective plastic film from the front-panel lens. If left in place, the film may affect the performance of your remote control.

4. Install the three supplied AAA batteries in the remote as shown. Be certain to follow the (+) and (–) polarity indicators that are on the top of the battery compartment.



5. Turn the AVR 325 on either by pressing the System Power Control 2 on the front panel, or via the remote by pressing the Power On Button 4, the AVR Selector 6 or any of the Input Selectors 5 7 on the remote. The Power Indicator 3 will turn green to confirm that the unit is on, and the Main Information Display 29 will also light.

Using the On-Screen Display

When making the following adjustments, you may find it easier to use the AVR 325's on-screen display system. These easy-to-read displays give you a clear picture of the current status of the unit and make it easy to see which speaker, delay, input or digital selection you are making.

To view the on-screen menus, make certain that you have made a connection from the Video Monitor Out Jack 14 on the rear panel to the composite or S-Video input of your TV or projector. In order to view the AVR 325's displays, the correct video source must be selected on the video display. The on-screen menus are not available when a component video display is in use.

IMPORTANT NOTE: When viewing the on-screen menus using a CRT-based projector, plasma display or any direct-view CRT monitor or television, it is important that they not be left on the screen for an extended period of time. The constant display of a static image such as these menus or video game images may cause the image to be permanently "burned into" the projection tubes, plasma screen or CRT. This type of damage is not covered by the AVR 325 warranty and may not be covered by the projector/TV set's warranty.

The AVR 325 has two on-screen display modes, "Semi-OSD" and "Full-OSD." When making configuration adjustments, it is recommended that the Full-OSD mode be used. This will place an option listing on the screen, making it easier to view the available options.

Making Configuration Adjustments

The full-OSD system is available by pressing the OSD Button 22. When this button is pressed, the MASTER MENU (Figure 1) will appear, and adjustments are made from the individual menus.

```
      * MASTER MENU *

▶  INPUT SETUP
   SURROUND SELECT
   SPEAKER SETUP
   DELAY ADJUST
   CHANNEL ADJUST
   MULTI-ROOM
   ADVANCED
   EXIT
```

Figure 1

The semi-OSD system is also available, allowing you to make adjustments directly, by pressing the appropriate buttons on the front panel or remote control for the specific parameter to be adjusted. For example, to change the digital input for any of the sources, press the Digital Select Button 17 and then press the ▲/▼ Buttons 14 to scroll through the list of options as they appear in the on-screen display or the Lower Display Line B.

To use the full-OSD menu system, press the OSD Button 22. When the menu is on the screen, press the ▲/▼ Buttons 14 until the on-screen ▶ cursor is next to the item you wish to adjust, and then press the Set Button 16 to adjust that item. The menus will remain on the screen for 20 seconds, and then they will "time-out" and disappear from the screen. The time-out may be increased to as much as 50 seconds by going to the ADVANCED menu, and changing the item titled FULL OSD TIME OUT.

When the full-OSD system is in use, the menu selections are not shown in the Main Information Display 29 A B. When the full-OSD menu system is used, OSD ON will appear in the Upper Display Line A and the OSD Indicator C will light to remind you that a video display must be used. When the semi-OSD system is used in conjunction with the discrete configuration buttons, the on-screen display will show a single line of text with the current menu selection. That selection will also be shown in the Upper Display Line A or the Lower Display Line B, depending on which parameter is being adjusted.

Setting the System Configuration Memory

The AVR 325 features an advanced memory system that enables you to establish different configurations for the speaker configuration, digital input, surround mode, delay times, crossover frequency and output levels for each input source. This flexibility enables you to customize the way in which you listen to each source and have the AVR 325 memorize those settings. This means, for example, that you may use different output levels or trims for different sources, or set different speaker configurations with the resultant changes to the bass management system. Once these settings are made, they will automatically be recalled whenever you select that input.

The factory default settings for the AVR 325 have all inputs configured for an analog audio input except for the DVD input, where the Coaxial Digital Audio Input 1 36 is the default. The default speaker settings are for "Large" speakers at the front left/right, "Small" at all other positions, and the subwoofer on. However, once the DSP processing system is used the first time for any input, the speaker settings will automatically default to "Small" at all positions with the subwoofer set to "LFE." The default setting for the surround modes is "Surround Off," or two-channel stereo, although Dolby Digital or DTS will automatically be selected as appropriate when a source with digital encoding is in use.

Before using the unit, you will probably want to change the settings for most inputs so that they are properly configured to reflect the use of digital or analog inputs, the type of speakers installed and the surround mode specifics of your home theater system. Remember that since the AVR 325 memorizes the settings for each input individually, you will need to make these adjustments for each input used. However, once they are made, further adjustment is only required when system components are changed.

To make this process as quick and easy as possible, we suggest that you use the full-OSD system with the on-screen menus, and step through each input. Once you have completed the settings for the first input, many settings may be duplicated for the remaining inputs. It is also a good idea to set the configuration data in the order these items are listed in the MASTER MENU, as some settings require a specific entry in a prior menu item. Remember that once the settings are made for one input, they must be made for all other input sources in your system.

Input Setup

The first step in configuring the AVR 325 is to configure each input. Once an input is selected, all settings for the Digital Input, Speaker Configuration, Surround Mode and Delay Timing will "attach" themselves to that input and be stored in a nonvolatile memory. This means that once made, the selection of an input will automatically recall those settings. For that reason, the procedures described below must be repeated for each input source so that you have the opportunity to customize each source to your specific listening requirements. However, once made, they need not be changed again unless you need to alter a setting.

When using the full-OSD system to make the setup adjustments, press the OSD Button 22 once so that the MASTER MENU (Figure 1) appears. The ▶ cursor will be next to the INPUT SETUP line. Press the Set Button 16 to enter the menu and the INPUT SETUP menu (Figure 2) will appear on the screen. Press the ◀/▶ Buttons 15 37 until the desired input name appears in the highlighted video, as well as being indicated in the front-panel Input Indicators 28 by the green LED next to the desired input name. If the input will use the standard left/right analog inputs, no further adjustment is needed.

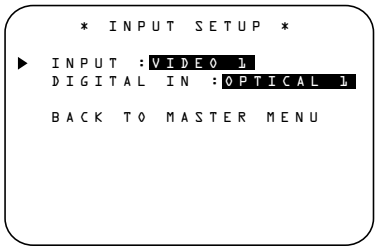


Figure 2

If you wish to associate one of the digital inputs with the selected input source, press the ▼ Button 14 on the remote while the INPUT SETUP menu (Figure 2) is on the screen, and the on-screen cursor will drop down to the DIGITAL IN line. Press the ◀/▶ Buttons 15 37 until the name of the desired digital input appears. To return to the analog input, press the buttons until the word ANALOG appears. When the correct input source appears, press the ▼ Button 14 once so that the ▶ cursor appears next to BACK TO MASTER MENU, and press the Set Button 16.

To change the digital input at any time using the discrete function buttons and the semi-OSD system, press the Digital Select Button 17 on the remote. Within five seconds, make your input selection using the ▲/▼ Buttons 14 until the desired digital or analog input is shown in the Upper Display Line A and in the lower line of the on-screen display. Press the Set Button 16 to enter the new digital input assignment.

When all needed adjustments have been made, press the ▼ Button 14 until the ▶ cursor is next to BACK TO MASTER MENU to continue with the system configuration.

Surround Setup

The next step is to set the surround mode you wish to use with the input that was previously selected in the INPUT menu. Since surround modes are a matter of personal taste, feel free to select any mode you wish – you may change it later. However, to make it easier to establish the initial parameters for the AVR 325, it is best to select Dolby Pro Logic II or Logic 7 for most analog inputs and Dolby Digital for inputs connected to digital sources. In the case of inputs such as a CD Player, Tape Deck or Tuner, you may wish to set the mode to Stereo ("Surround off") as they are not typically used with multichannel program material, and it is unlikely that surround-encoded material will be used. Alternatively, the Logic 7 Music mode is a good choice for stereo-only source material. See page 28 for more information on available surround modes.

When selecting surround modes for digital program material, the AVR 325 will always examine the data stream and automatically select Dolby Digital or DTS as applicable.

It is easiest to complete the surround setup using the full-OSD on-screen menus. From the MASTER MENU (Figure 1), press the ▲/▼ Buttons 14 until the ▶ cursor is next to the SURROUND SELECT line. Press the Set Button 16 until the SURROUND SELECT menu (Figure 3) is on the screen.

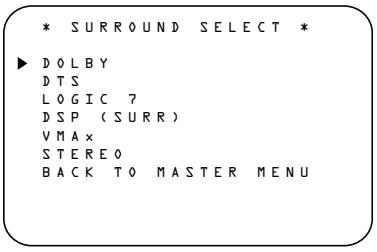


Figure 3

Each of the option lines on this menu (Figure 3) selects the surround mode category, and within each of those categories there will be a choice of the specific mode options. The choice of modes will vary according to the speaker configuration in your system. When the SURR BACK line of the SPEAKER SETUP menu (Figure 5) is set to NONE the AVR 325 will be configured for 5.1-channel operation, and only the modes appropriate to a five-speaker system will appear. When the SURR BACK line of the SPEAKER SETUP menu (Figure 5) is set to SMALL or LARGE the AVR 325 will be configured for 6.1/7.1-channel operation, and additional modes such as Dolby Digital EX and DTS-ES will appear, as they are only available when seven main speakers are present. In addition, some of the modes available in the AVR 325 will not appear unless a digital source is selected and is playing the correct bitstream.

To select the mode that will be used as the initial default for an input, first press the ▲/▼ Buttons 14 until the on-screen cursor is next to the desired mode's master category name, such as DOLBY, DTS, DSP (SURR) or VMAx. Next, press the Set Button 16 to view the sub-menu. Press the ◀/▶ Buttons 15 37 to scroll through the available choices, and then press the ▼ Button 14 so that the cursor is next to BACK TO MASTER MENU to continue the setup process.

The following few paragraphs detail the instructions needed for modes with multiple choices.

On the DOLBY menu (Figure 4), choices include Dolby Digital, Dolby Pro Logic II-Music, Dolby Pro Logic II-Movie, Dolby Pro Logic II-Emulation and Dolby 3 Stereo. The Dolby Digital EX mode is only available when the system is set for 6.1/7.1 operation by configuring the Surround Back speakers to "Small" or "Large" as described on page 22. When a disc is playing that contains a special "flag" signal in the digital audio data stream, the EX mode will be selected automatically. It may also be selected using this menu or through the front panel or remote controls as shown on page 27. A complete explanation of these modes is found on page 28.

When the Dolby Digital mode is selected, there are additional settings available for the Night mode.

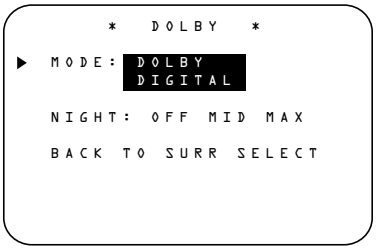


Figure 4

The Night mode is a feature of Dolby Digital that uses special processing to preserve the dynamic range and full intelligibility of a movie soundtrack while reducing the peak level. This prevents abruptly loud transitions from disturbing others, without reducing the sonic impact of a digital source. The Night mode is only available when specially encoded Dolby Digital signals are played.

To adjust the Night mode setting, make certain that the ▶ cursor is on the NIGHT line of the DOLBY menu. Next, press ◀/▶ Buttons 15 37 to choose between the following settings, as they appear in the on-screen display:

OFF: When OFF is highlighted, the Night mode will not function.

MID: When MID is highlighted, a mild compression will be applied.

MAX: When MAX is highlighted, a more severe compression algorithm will be applied.

We recommend that you select the MID setting as a starting point and change to the MAX setting later, if desired.

The Night mode may also be adjusted directly any time a Dolby Digital source is playing by pressing the Night Mode Button ⑫. When the button is pressed, D-RANGE will appear in the lower third of the video screen and in the Main Information Display 29. Press the ▲/▼ Button ⑭ within three seconds to select the desired setting.

When all settings for the surround setup have been made, press the ▲/▼ Buttons ⑭ so that the ▶ cursor is next to BACK TO MASTER MENU, and press the Set Button ⑯ to return to the MASTER MENU.

On the DTS menu, the choices made with the ◀/▶ Buttons ⑮ ㊲ on the remote are determined by a combination of the type of program material in use and whether the 5.1- or 6.1/7.1-channel configuration is in use.

When a DTS source is playing, the choice of modes for 7.1 systems will vary according to the type of program source (DTS 5.1, DTS-ES Matrix or DTS-ES Discrete). Press the ◀/▶ Buttons ⑮ ㊲ to scroll through the choices that are available for your system and the program in use. The DTS Neo:6 Music mode is available with analog stereo sources and the DTS Neo:6 Cinema mode is available with analog matrix surround-encoded sources to deliver an enhanced 5.1-channel sound field.

When the 5.1 configuration is in use, the AVR will automatically select the 5.1 version of DTS processing when a DTS data stream is selected. When the 6.1/7.1 mode is selected, the DTS-ES Discrete mode will automatically be activated when a DTS source with the ES Discrete "flag" is in use. When a non-ES DTS disc is in use, you may select the DTS-ES Matrix mode through this menu to create a full eight-speaker surround mode. See page 28 for a complete explanation of the DTS modes.

On the LOGIC 7 menu, the choices made with the ◀/▶ Buttons ⑮ ㊲ on the remote are determined by whether the 5.1- or 6.1/7.1-channel configuration is in use. In either case, the selection of a Logic 7 mode enables Harman Kardon's exclusive Logic 7 processing to create fully enveloping, multi-channel surround sound from either two-channel Stereo or Matrix-encoded programming such as VHS cassettes, laser discs or television broadcasts produced with Dolby surround.

In the 5.1 configuration, you may select the Logic 7/5.1 Music, Cinema or Enhance mode. They work best with two-channel music, surround-encoded programs or standard two-channel programming of any type, respectively. For 6.1/7.1 configurations, the Music and Cinema modes may be selected. The Logic 7 modes are not available when either Dolby Digital or DTS digital soundtracks are in use. See page 28 for a complete explanation of the Logic 7 modes.

On the DSP (SURR) menu, the choices made with the ◀/▶ Buttons ⑮ ㊲ on the remote select from one of the DSP surround modes that are designed for use with two-channel stereo programs to create a variety of sound field presentations. The choices available are Hall 1, Hall 2, Theater, VMAx Near and VMAx Far. The Hall and Theater modes are designed for multichannel installations, while the two VMAx modes are optimized for use in delivering a full surround field when only the front left and front right speakers are installed. See page 28 for a complete explanation of the DSP surround modes.

On the STEREO menu, the choices made with the ◀/▶ Buttons ⑮ ㊲ on the remote may either turn the surround processing off for a traditional two-channel stereo presentation, or select 5 STEREO or 7 STEREO depending on whether the 5.1 or 6.1/7.1 output is in use. The latter modes feed a two-channel presentation to all speakers, regardless of the number of speakers in use. See page 28 for a complete explanation of the 5 Stereo and 7 Stereo modes.

After the selections are made on the Dolby, DTS, Logic 7, DSP (Surround) or Stereo menus, press the ▲/▼ Buttons ⑭ so that the cursor moves to the BACK TO MASTER MENU line and press the Set Button ⑯.

Speaker Setup

This menu tells the AVR 325 which type of speakers are in use. This is important as it adjusts the settings that decide whether your system will use the "5-channel" or "6-channel/7-channel" modes, as well as determining which speakers receive low-frequency (bass) information.

For each of these settings, use the LARGE setting if the speakers for a particular position are traditional full-range loudspeakers. Use the SMALL setting for smaller, frequency-limited satellite speakers that do not reproduce sounds below 200Hz. Note that when "small" speakers are used, a subwoofer is required to reproduce low-frequency sounds. Remember that the "large" and "small" descriptions do not refer to the actual physical size of the speakers, but to their ability to reproduce low-frequency sounds. If you are in doubt as to which category describes your speakers, consult the specifications in the speakers' owner's manual, or ask your dealer.

This menu screen also allows you to enter the settings for the AVR 325's Triple Crossover feature, which allows a different crossover point to be used for the front left/right, center and surround speakers. In systems where full-range or tower speakers are used for the front soundstage or where different brands or models are in use at the various speaker positions, this feature allows you to customize the bass management and redirection circuits with a precision not previously possible.

It is easiest to enter the proper settings for speaker setup through the SPEAKER SETUP menu (Figure 5). If that menu is not already on your screen from the prior adjustments, press the OSD Button ㉒ to bring up the MASTER MENU (Figure 1), and then press the ▼ Button ⑭ until the cursor is on the SPEAKER SETUP line. At this point, press the Set Button ⑯ to bring up the SPEAKER SETUP menu (Figure 5).

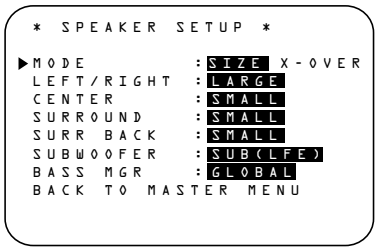


Figure 5

The first line of the SPEAKER SETUP menu (Figure 5) allows you to switch the menu to change either the underlying speaker size setting or the exact crossover point used for that speaker group. For the first pass through the menu, leave the setting at its default option of SIZE, and then proceed as outlined below. Once the speaker choices have been set, you may wish to return to this line to change the option so that the crossover settings may be adjusted.

Begin the speaker setup process by making certain that the cursor is pointing toward the LEFT/RIGHT line, which sets the configuration for the front left and right speakers. If you wish to make a change to the front speakers' configuration, press the ◀/▶ Buttons ⑮ ㊲ so that either LARGE or SMALL appears, matching the appropriate description from the definitions shown above.

When SMALL is selected, low-frequency sounds will be sent only to the subwoofer output. If you choose this option and there is no subwoofer connected, you will not hear any low-frequency sounds from the front channels.

When LARGE is selected, a full-range output will be sent to the front left and front right outputs. Depending on the choice made in the SUBWOOFER line in this menu, bass information may also be directed to the front left/right speakers, a subwoofer or both.

NOTE: When the front speakers are set to the LARGE option and the surround mode is set to "Surround Off", or pure two-channel stereo, when an analog signal source is present it will be routed directly from the input to the volume control without being digitized or processed. If you have full-range front speakers and wish to remove all digital processing from the circuit path, select this configuration. If you wish to set this option for use with only one input, such as a CD player that uses an external DAC or an optional, external phono preamp, you may also wish to choose the INDEPENDENT setting on the BASS MGR line at the bottom of this menu so that only those inputs where the analog bypass is desired will be routed in this fashion, while other analog inputs such as a VCR or cable box will be digitized for surround processing.

When you have completed your selection for the front channel, press the ▼ Button 14 on the remote to move the cursor to CENTER.

Press the ◀/▶ Buttons 15 37 on the remote to select the option that best describes your system, based on the speaker definitions shown below.

When SMALL is selected, low-frequency center channel sounds will be sent only to the subwoofer output. If you choose this option and there is no subwoofer connected, you will not hear low-frequency sounds from the center channel.

When LARGE is selected, a full-range output will be sent to the center speaker output, and NO center channel signal will be sent to the subwoofer output.

NOTE: If you choose Logic 7 as the surround mode for the particular input source for which you are configuring your speakers, the AVR 325 will not make the "large" option available for the center speaker. This is due to the requirements of Logic 7 processing, and does not indicate a problem with your receiver.

When NONE is selected, no signals will be sent to the center channel output. The receiver will operate in a "phantom" center channel mode and center channel information will be sent to the left and right front channel outputs. When only front left and right speakers are used, with no center or surround speakers, VMAx is a good alternative mode.

When you have completed your selection for the center channel, press the ▼ Button 14 on the remote to move the cursor to SURROUND.

Press the ◀/▶ Buttons 15 37 on the remote to select the option that best describes the surround speakers in your system based on the speaker definitions shown on this page.

When SMALL is selected, low-frequency surround channel sounds will be sent to the subwoofer output only. If you choose this option and there is no subwoofer connected, you will not hear any low-frequency sounds from the surround channel.

When LARGE is selected, a full-range output will be sent to the surround channel outputs, and NO surround channel signals will be sent to the subwoofer output.

When NONE is selected, surround sound information will be split between the front left and front right outputs. For optimal performance when no surround speakers are in use, the Dolby 3 Stereo mode should be used.

When you have completed your selections for the main surround channels, press the ▼ Button 14 on the remote to move the cursor to SURR BACK. This line serves two functions in that it not only configures the setting for the surround back channels when they are present; it also tells the AVR 325's processing system to configure the unit for either 5.1 or 6.1/7.1 operation.

Press the ◀/▶ Buttons 15 37 on the remote to select the option that best describes the speakers in use at the left and right back surround positions based on the definitions on this page:

When NONE is selected, the system will adjust so that only 5.1-channel surround processing/decoding modes are available and the surround back amplifier channels will not be used. When this is the case for your system you may wish to take advantage of the availability of this amplifier channel pair for use in powering a second set of speakers that have their source selected by the AVR 325's multiroom control system. See page 34 for more information.

When SMALL is selected, the system will adjust so that the full complement of 6.1/7.1 surround processing/decoding modes are available, and low-frequency information below the crossover point will be sent to the subwoofer output. If you choose this option and there is no subwoofer connected, you will not hear any low-frequency sounds from the surround back channel.

When LARGE is selected, the system will adjust so that the full complement of 6.1/7.1 surround processing/decoding modes are available, and a full-range signal will be sent to the surround back channels, with no low-frequency information sent to the subwoofer output.

When you have completed your selection for the back surround channels, press the ▼ Button 14 on the remote to move the cursor to SUBWOOFER.

Press the ◀/▶ Buttons 15 37 on the remote to select the option that best describes your system.

The choices available for the subwoofer position will depend on the settings for the other speakers, particularly the front left/right positions.

If the front left/right speakers are set to SMALL, the subwoofer will automatically be set to SUB, which is the "on" position.

If the front left/right speakers are set to LARGE, three options are available:

- If no subwoofer is connected to the AVR 325, press the ◀/▶ Buttons 15 37 on the remote so that NONE appears in the on-screen menu. When this option is selected, all bass information will be routed to the front left/right "main" speakers.

- If a subwoofer is connected to the AVR 325, you have the option to have the front left/right "main" speakers reproduce bass frequencies at all times, and have the subwoofer operate only when the AVR 325 is being used with a digital source that contains a dedicated Low-Frequency Effects, or LFE, soundtrack. This allows you to use both your main and subwoofer speakers to take advantage of the special bass created for certain movies. Press ◀/▶ Buttons 15 37 on the remote so that SUB (LFE) appears in the on-screen menu.

- If a subwoofer is connected and you wish to use it for bass reproduction in conjunction with the main front left/right speakers, regardless of the type of program source or Surround mode you are listening to, press the ◀/▶ Buttons 15 37 on the remote so that SUB LFE+L/R appears in the on-screen menu. When this option is selected, a full-range signal will be sent to the front left/right "main" speakers, and the subwoofer will receive the bass frequencies under frequency selected, as described below.

When all initial speaker "size" settings have been made, you now have the option to take advantage of the AVR 325's Triple Crossover system, which allows individual crossover settings to be made for each speaker grouping. The low-frequency crossover point is set by the design of your speakers. Depending on the design and driver complement of your speakers, it is defined as the frequency which is either the lowest possible frequency the speaker is capable of reproducing, or the frequency at which sound is sent to the speaker's internal low-frequency driver, as opposed to the mid-range driver. Before making any changes to the settings for the crossover point, we suggest that you find the crossover point for the speakers in each of the three groupings, front left/right, center and surrounds, by looking at the specifications page of the speakers' owner's manual, by getting that information from the manufacturer's Web site, or by contacting your dealer or the manufacturer's customer service department. You will need this figure to accurately configure the next group of settings.

The factory default setting for all speaker positions is 100Hz. If that setting is acceptable for all channels, then no adjustments are needed and you may skip this section. However, should you wish to change one of the settings, please proceed by pressing the ▲ Button 14 so that the cursor moves back up to the top of the list of setting options. Press the ▲/▼ Buttons 14 so that X-OVER is highlighted and the menu data will change to the screen shown in Figure 6.

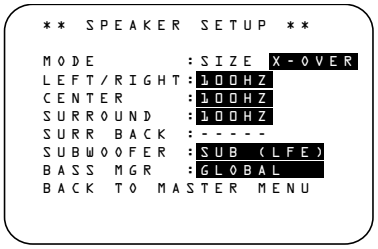


Figure 6

To change the setting for any of the three speaker groups, press the ▲/▼ Buttons 14 until the cursor is next to the line where you wish to make a change and then press the ◀/▶ Buttons 15 37 until the desired setting appears. The available choices at which point low-frequency information will be sent to the subwoofer, rather than to the main speaker channel, are 40Hz, 60Hz, 80Hz, 100Hz, 120Hz and 200Hz. Pick the choice that is identical to the information for the speakers, or if an exact match is not possible, pick the closest choice that is ABOVE the speaker's low-frequency limit or crossover point to avoid the creation of a low-frequency "hole" where your system will have no bass information.

In cases where LARGE has been selected as the front channel speaker option and LFE+L/R has been selected as the subwoofer option, the front channel sound information below the setting shown will be sent to BOTH the front channel speakers and the subwoofer. Note, also, that when the LARGE-LFE+L/R setting has been selected, the crossover point is set by making adjustments at the SUBWOOFER line, but the setting for the front left/right speakers will automatically change in tandem so that the same setting appears for both speaker positions. This ensures that there is no "hole" in the sound field due to different crossover points at the front and subwoofer speakers.

When all crossover settings have been made, or in those cases where none are needed, press the ▼ Button 14 so that the cursor is next to the BASS MGR line to make the final setting on this menu.

This setting allows you to use the same speaker configuration and crossover settings for all inputs, or to have different settings for each input. In most cases the factory default setting of GLOBAL will be appropriate, as most listeners do not need to have individualized speaker settings. However, some listeners, particularly those with full-range front speakers that are used for both movies and music, may prefer that different crossover points be used when listening to music through a CD player as opposed to a movie from a DVD player, VCR or cable/satellite set-top.

If you wish to customize the crossovers to each input, make certain that the cursor is on the BASS MGR line and press the ◀/▶ Buttons 15 37 so that INDIVIDUAL appears in highlighted video. When this setting is entered by exiting the menu, the configuration settings just entered will apply to the current input ONLY, and you will need to go back to the INPUT menu to select another input, and then return to this menu page again to change the settings for the next input. Repeat the procedure for any input where you wish to have a different set of speaker configuration and crossover settings.

When all speaker selections have been made, press the ▼ Button 14 and then the Set Button 16 to return to the MASTER MENU.

Delay Settings

Due to the different distances between the listening position for the front channel speakers and the surround speakers, the amount of time it takes for sound to reach your ears from the front versus surround speakers differs. You may compensate for this difference through the use of the delay settings to adjust the timing for the speaker placement and acoustic conditions in your listening room or home theater.

The AVR 325's advanced software enables you to quickly and easily set delay times without the need to calculate them using a complex formula. Instead, all you need to do is measure the approximate distance between your listening position and each of the speakers in your system. When you enter those distances into the AVR's memory as shown below, the AVR's microprocessor does the rest of the work, calculating the proper delay time. The measurements need not be accurate to the inch, as the system is designed to accommodate a typical listening area rather than require the precise measurement to one "sweet spot" position.

Due to the differences in the way each surround mode operates, some modes allow for a greater range of delay times than others. To avoid problems, we recommend that delay times be adjusted using the Dolby Digital mode. If a different mode is selected at a later time, the AVR 325 will automatically restrict the delay settings to those required by the surround mode in use.

Delay times are only adjustable for the Dolby modes, so you will notice that the DELAY menu may not be accessed when any other mode, such as a DTS or Logic 7 option, has been selected. In addition, when a non-Dolby Digital mode such as Dolby 3 Stereo or Pro Logic II is selected, adjustments may be made to the Surround speakers only.

To set the delay time for a specific input, the DELAY ADJUST menu (Figure 7) should be visible on your on-screen display. If the system is not already at that point, press the OSD Button 22 to bring up the MASTER MENU, press the ▼ Button 14 three times or until the on-screen ▶ cursor is pointing at the DELAY ADJUST line. Press the Set Button 16 to call up the menu.

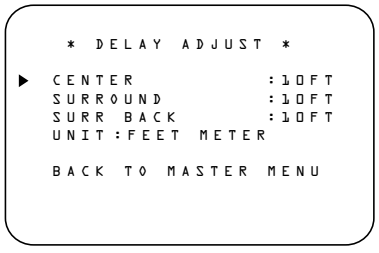


Figure 7

Once the DELAY ADJUST menu is on your screen, note that the default setting to enter the distances from the speakers to the listening position is in feet. If your measurements are in feet, proceed to the next step; if your measurements are made in meters, press the ▼ Button 14 until the on-screen ▶ cursor is at the UNIT line on the menu. Then, press the

◀/▶ Buttons 15 37 so that METER is highlighted. When the change in measurement units is made, press the ▲/▼ Buttons 14 to return the ▶ cursor to the CENTER position.

With the on-screen ▶ cursor pointing to CENTER, press the ◀/▶ Buttons 15 37 until the distance from the center speaker to the preferred listening position is entered. Next, press the ▼ Button 14 to move the cursor to the SURROUND line and use the ◀/▶ Buttons 15 37 again to enter the distance from the video display at the front of the room to the surround speakers. Finally, if the system is configured for 7.1 operation by entering LARGE or SMALL on the SURR BACK line of the SPEAKER SETUP menu, press the ▼ Button 14 again and use the ◀/▶ Buttons 15 37 to enter the distance from the video display at the front of the room to the surround speakers. Remember that this last adjustment will only be needed when you have surround back speakers installed and Dolby Digital chosen as the surround mode.

When the speaker-to-listening-position distance has been entered for all active speaker positions, press the ▲/▼ Buttons 14 until the on-screen cursor is next to BACK TO MASTER MENU and press the Set Button 16.

The delay settings may be changed at any time directly from the remote control by pressing the Delay Button 36. CENTER DELAY will appear in the Lower Display Line B, but you may press the ▲/▼ Buttons 14 to select any of the speaker groups.

Press the Set Button 16 when the desired speaker group appears, and then press the ▲/▼ Buttons 14 again to enter the distance from the speaker to the listening position. Press the Set Button 16 again to enter the data. You may then press the ▲/▼ Buttons 14 to select another speaker group to repeat the procedure as needed, or wait five seconds for the system to return to normal operation.

Output Level Adjustment

Output level adjustment is a key part of the configuration of any surround sound product. It is particularly important for a digital receiver such as the AVR 325, as correct outputs ensure that you hear soundtracks with the proper directionality and intensity.

IMPORTANT NOTE: Listeners are often confused about the operation of the surround channels. While some assume that sound should always be coming from each speaker, most of the time there will be little or no sound in the surround channels. This is because they are only used when a movie director or sound mixer specifically places sound there to create ambience or a special effect, or to continue action from the front of the room to the rear. When the output levels are properly set, it is normal for surround speakers to operate only occasionally. Artificially increasing the volume to the rear speakers may destroy the illusion of an enveloping sound field that duplicates the way you hear sound in a movie theater or concert hall.

Before beginning the output level adjustment process, make certain that all speaker connections have been properly made. The system volume should be set to the level that you will use during a typical listening session. While the AVR 325 allows you to set output levels manually, we recommend that the EzSet system be used when the AVR is first installed, to establish the initial level settings.

Using EzSet

Harman Kardon's exclusive EzSet remote makes it possible to quickly and accurately set the AVR 325's output levels without the use of a sound pressure meter, although manual adjustment is also available. However, for the easiest setup, follow these steps while seated in the listening position that will be used most often:

1. Make certain that all speaker positions have been properly configured for their "large" or "small" settings (as outlined above) and turn off the OSD system if it is in use.

2. Adjust the volume so that it is at -15dB, as shown in the on-screen display or Main Information Display 29.

3. Hold the remote in front of you at arm's length, being sure not to cover the EzSet Sensor Microphone 44 at the top of the remote.

4. Press and hold the SPL Selector Button 41 for three seconds. Release it when the Program/SPL Indicator 3 stops flashing and remains lit. Within five seconds, press the 5 Button 18 on the remote if your system is configured for 5.1 operation with standard speakers or the 7 Button 18 on the remote if your system is configured for 6.1/7.1 operation with a full speaker complement including rear surround speakers. Once the correct channel configuration button has been pressed, the test noise will be heard from the front left speaker.

5. At this point, EzSet will take over, adjusting the output level of each channel so that when the process is complete all levels will be equal and at the set reference point. This process may take a few minutes, depending on the extent of adjustment required.

6. During the adjustment, you will see the location of the channel position being adjusted appear in the on-screen display (if connected) and in the Main Information Display 29, alternating with a readout of the output setting, relative to the reference volume level, and in the Speaker/Channel Input Indicators E where the letters for the channel being adjusted will flash to indicate the channel from which the test tone should be heard. As the adjustment proceeds, a few things will happen simultaneously:

   - The channel position being adjusted will flash in the Speaker/Channel Input Indicators E. If the test noise is heard from a channel other than the one shown in the indicator, there is an error in the speaker connections. If this is the case, press the Test Button 9 TWICE to stop the adjustment. Then, turn the unit off and verify that all speakers are connected to the proper Outputs 6 7 9 10.

   - As the individual channels are set, the channel name and the adjustment offset will appear in the on-screen display (if connected) and the Main Information Display 29. While the level is changing, the Program/SPL Indicator 3 will change colors to reflect the output level in relation to the reference. A red indication shows that the level is too high, while an amber indication shows that the level is too low. When the indicator is green, the level is correct, and the test noise will move to the next channel.

   - While adjustments are being made, the red LED under the AVR Selector 6 will flash. This is normal, and indicates that EzSet is operating.

7. After the test noise has circulated once through each channel, it will send the tone to each channel once again, to verify the settings.

8. After two complete circulations of the tone, the levels are set. The Program/SPL Indicator 3 will remain green at each channel. Upon completion of the second circulation, the Program/SPL Indicator 3 will flash green twice and then go out. The tone will stop and the AVR 325 will return to normal operation.

If you find that the output levels chosen by EzSet are either uncomfortably low or high, you may repeat the procedure. Return to Step 2 and adjust the master volume either slightly higher or lower to accommodate your particular room layout and your tastes. You may repeat this procedure as many times as necessary to

achieve a desired result. In order to prevent possible damage to your hearing or your equipment, we emphasize that you should avoid setting the master volume above 0dB.

NOTE: The subwoofer output is not adjusted when the test tone is in use. To adjust the subwoofer output you must use an external source, following the instructions on page 32.

Manual Output Level Adjustment

Output levels may also be adjusted manually, either to set them to a specific level with an SPL meter, or to make fine-tuning adjustments to the levels obtained using the EzSet remote.

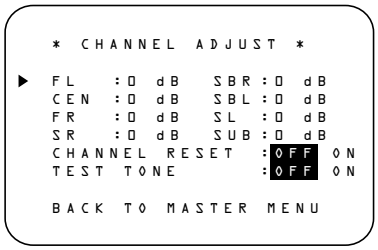

* CHANNEL ADJUST *
▶ FL :0 dB SBR :0 dB
CEN :0 dB SBL :0 dB
FR :0 dB SL :0 dB
SR :0 dB SUB :0 dB
CHANNEL RESET :OFF ON
TEST TONE :OFF ON
BACK TO MASTER MENU

Figure 8

Manual output level adjustment is most easily done through the CHANNEL ADJUST menu (Figure 8). If you are already at the MASTER MENU, press the ▼ Button 14 until the on-screen ▶ cursor is next to the CHANNEL ADJUST line. If you are not at the MASTER MENU, press the OSD Button 22 to bring up the MASTER MENU (Figure 1), and then press the ▼ Button 14 until the on-screen ▶ cursor is next to the CHANNEL ADJUST line. Press the Set Button 16 to bring the CHANNEL ADJUST menu (Figure 8) to the screen.

When the CHANNEL ADJUST menu appears, press the ▼ Button 14 until the on-screen ▶ cursor is next to the TEST TONE line. Press the ◀/▶ Buttons 15 37 so that ON is highlighted and the AVR's internal test tone will begin to circulate from speaker to speaker in a clockwise direction into all speakers. The test noise will play for two seconds in each speaker before circulating, and a blinking on-screen cursor will appear next to the name of each speaker location when the sound is at that speaker.

NOTE: Remember to verify that the speakers have been properly connected. As the test noise circulates, listen to make certain that the sound comes from the speaker position shown in the Main Information Display 29. If the sound from a speaker location does NOT match the position indicated in the display, turn the AVR 325 off using the Main Power Switch 1 and check the speaker wiring or connections to external power amplifiers to make certain that each speaker is connected to the correct output terminal.

After checking for speaker placement, let the test noise circulate again, and listen to see which channels sound louder than the others. Using the front left speaker as a reference, press the ◀/▶ Buttons 15 37 on the remote to bring all speakers to the same volume level. When one of the ◀/▶ Buttons 15 37 is pushed, the test noise circulation will pause on the channel being adjusted to give you time to make the adjustment. When you release the button, the circulation will resume after five seconds.

Continue to adjust the individual channels until the volume level sounds the same from each speaker. Adjustments should be made with the ◀/▶ Buttons 15 37 on the remote only, NOT the main volume controls. If you are using a sound-pressure level (SPL) meter for precise level adjustment, set the volume so that the meter reads 75dB, C-Weighting Slow.

You may also adjust the output levels manually while using the level indication feature of the EzSet remote. To activate the sensor and indicator, simply press and release the SPL Selector Button 41 on the remote while the test tone is circulating. The Program/SPL Indicator 3 will change color to indicate the level. Adjust the level using the ◀/▶ Buttons 15 37 until the LED lights green for all channels. When it is red, the level is too high; when it is amber, the level is too low. Press the SPL Selector Button 41 when you are finished to turn the sensor and indicator off.

NOTE: The subwoofer level is not adjustable when the normal test tone is in use. The subwoofer output level may also be adjusted when the channel levels are being trimmed to a program source rather than the test tone, as shown on page 31.

When all channels have an equal volume level, the adjustment is complete. To exit this menu, press the ▲/▼ Buttons 14 until the on-screen ▶ cursor is next to the BACK TO MASTER MENU line, and then press the Set Button 16 to return to the MASTER MENU.

The output levels may also be adjusted at any time using the remote control and semi-OSD system. To adjust the output levels in this fashion, press the Test Button 9. As soon as the button is pressed, the test tone will begin to circulate as indicated earlier. The correct channel from which the test noise should be heard will be shown in the lower third of the video screen and in the Lower Display Line B. While the test noise is circulating, the proper channel position will also be indicated in the Speaker/Channel Input Indicators E by a blinking letter within the correct channel.

To adjust the output level, press the ▲/▼ Buttons 14 until the desired level is shown in the display or on-screen. Once the buttons are released, the test noise will begin to circulate again in five seconds.

When all channels have the same output level, press the Test Button 9 again to complete the process.

NOTE: Output level adjustment is not available for the VMAx or Surround Off modes.

Additional Input Adjustments

After one input has been adjusted for Surround mode, digital input (if any), speaker type, and output levels, go back to the INPUT SETUP line on the MASTER MENU (Figure 1) and enter the settings for each input that you will use. In most cases, only the digital input and surround mode will be different from one input to the next, while the speaker type, crossover frequency, Night mode and output level settings will usually be the same and may be quickly entered by entering the same data used for the original input.

When all settings and adjustments have been made, press the OSD Button 22 to return to normal operation of the AVR.

Once the settings outlined on the previous pages have been made, the AVR 325 is ready for operation. While there are some additional settings to be made, these are best done after you have had an opportunity to listen to a variety of sources and different kinds of program material. These advanced settings are described on pages 32 to 33 of this manual. In addition, any of the settings made in the initial configuration of the unit may be changed at any time. As you add new or different sources or speakers, or if you wish to change a setting to better reflect your listening taste, simply follow the instructions for changing the settings for that parameter as shown in this section.

Having completed the setup and configuration process for your AVR 325, you are about to experience the finest in music and home theater listening. Enjoy!

Basic Operation

Once you have completed the initial setup and configuration of the AVR 325, it is simple to operate and enjoy. The following instructions will help you maximize the enjoyment of your new receiver:

Turning the AVR 325 On or Off

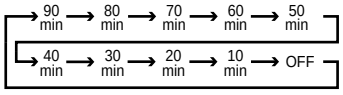
• When using the AVR 325 for the first time, you must press the Main Power Switch 1 on the front panel to turn the unit on. This places the unit in a Standby mode, as indicated by the amber color of the Power Indicator 3. Once the unit is in Standby, you may begin a listening session by pressing the System Power Control 2 on the front panel, or the Power On Button 4 or AVR Selector 6 on the remote. The Power Indicator 3 will turn green. This will turn the unit on and return it to the input source that was last used. The unit may also be turned on from Standby by pressing any of the Input Selector Buttons 5 7 C D on the remote or the Input Source Selector Button 15 on the front panel.

NOTE: After pressing one of the Input Selector Buttons 5 7 to turn the unit on, press the AVR Selector 6 to set the remote control to the AVR 325 functions.

To turn the unit off at the end of a listening session, simply press the System Power Control 2 on the front panel or the Power Off Button 1 A on the remote. Power will be shut off to any equipment plugged into the rear-panel Switched AC Accessory Outlet 11 and the Power Indicator 3 will turn amber.

When the remote is used to turn the unit "off" it is actually placing the system in a Standby mode, as indicated by the amber color of the Power Indicator 3.

• To program the AVR 325 for automatic turn-off, press the Sleep Button 10 on the remote. Each press of the button will decrease the time before shutdown in the following sequence:



The sleep time will be displayed in the Lower Display Line B and it will count down until the time has elapsed.

When the programmed sleep time has elapsed, the unit will automatically turn off. The front-panel display will dim to one-half brightness when the Sleep function is programmed. To cancel the Sleep function, press and hold the Sleep Button 10 until the information display returns to normal brightness; the Sleep indicator numbers will disappear and the words SLEEP OFF will appear in the Lower Display Line B.

When you will be away from home for an extended period of time it is always a good idea to completely turn the unit off with the front-panel Main Power Switch 1.

NOTE: All preset memories are lost if the unit is left turned off by using the Main Power Switch 1 for more than two weeks.

Source Selection

• To select a source, press any of the Input Selector Buttons 5 7 C D on the remote.

• The input source may also be changed by pressing the front-panel Input Source Selector Button 15. Each press of the button will move the input selection through the list of available inputs.

• As the input is changed, the AVR 325 will automatically switch to the digital input (if selected), surround mode, speaker configuration, output levels, crossover frequency and night mode status that were entered during the configuration process for that source.

• The front-panel Video 4 Inputs 19 20, Optical 3 Digital Input 17 or the Coaxial 3 Digital Input 18 may be used to connect a device such as a video game or camcorder to your home entertainment system on a temporary basis.

• As the input source is changed, the new input name will appear momentarily as an on-screen display in the lower third of the video display. The input name will also appear in the Main Information Display 29 and a green LED will light next to the selected input's name in the front-panel Input Indicators 28.

• When an audio source is selected, the last video input used remains routed to the Video 1/Video 2 Outputs 17 19 and Video Monitor Outputs 14. This permits simultaneous viewing and listening to different sources.

• When a composite or S-Video source is selected, the video signal for that input will be routed to the Video Monitor Output 14 and will be viewable on a TV monitor connected to the AVR 325.

6-Channel/8-Channel Direct Input

• There are two input choices available for use with sources such as a DVD-Audio or SACD player that are connected to the 8-Channel Direct Inputs 40. Select the appropriate input according to the way your system and source equipment is configured:

- 6 CH DIRECT should be used when the SBR and SBL inputs are NOT in use and the input source device has its own internal bass management system. This input passes the input from the source directly through to the volume control without any analog to digital conversion and it mutes the unused input jacks to prevent unwanted noise from interfering with system performance.
- 8 CH DIRECT should be used when an input is connected to all eight 8-Channel Direct Inputs 40 and when the input source device has its own internal bass management system. This input passes the input from the source directly through to the volume control without any analog to digital conversion and it mutes the unused input jacks to prevent unwanted noise from interfering with system performance.

Volume Control

• Adjust the volume to a comfortable level using the front-panel Volume Control 27 or remote Volume Up/Down Buttons 40 ❙.

• To temporarily silence all speaker outputs, press the Mute Button 43 K. This will interrupt the output to all speakers and the headphone jack, but it will not affect any recording or dubbing that may be in progress. When the system is muted, the word MUTE will flash in the Main Information Display 29. Press the Mute Buttons 43 K again to return to normal operation.

• You may adjust the bass and treble tone controls at any point during a listening session by simply turning the Bass Control 21 or Treble Control 23 until the desired setting is achieved. You may also totally remove the tone controls from the circuit so that the output is "flat" at any time by pressing the Tone Mode Button 5 and then pressing the ◀/▶ Buttons 10 13 so that TONE OFF appears in the on-screen display and the Lower Display Line B.

• For private listening, plug the 1/4" stereo phone plug from a pair of stereo headphones into the front-panel Headphone Jack 4. When the headphone's plug is connected, the word HEADPHONE will scroll once across the Lower Display Line B and all speakers will be silenced. When the headphone plug is removed, the audio feed to the speakers will be restored.

Surround Mode Selection

One of the most important features of the AVR 325 is its ability to reproduce a full multichannel surround sound field from digital sources, analog matrix surround-encoded programs and standard stereo programs.

Selection of a surround mode is based on personal taste, as well as the type of program source material being used. For example, motion pictures or TV pro-

grams bearing the logo of one of the major surround-encoding processes, such as Dolby Surround, DTS Stereo or UltraStereo,® may be played in either the Dolby Digital, Dolby Pro Logic II Cinema, DTS Neo:6 Cinema, or Logic 7 Cinema surround modes depending on the source material.

NOTE: Once a program has been encoded with matrix surround information, it retains the surround information as long as the program is broadcast in stereo. Thus, movies with surround sound may be decoded via any of the analog surround modes such as Pro Logic II Cinema, Logic 7 Cinema or DTS Neo:6 Cinema, when they are broadcast via conventional TV stations, cable, pay-TV and satellite transmission. In addition, a growing number of made-for-television programs, sports broadcasts, radio dramas and music CDs are also recorded in surround sound. You may view a list of these programs at the Dolby Laboratories Web site at www.dolby.com.

Even when a program is not listed as carrying intentional surround information, you may find that the Pro Logic II, Logic 7 Enhanced or DTS Neo:6, VMAx and the Hall or Theater modes often deliver enveloping surround presentations through the use of the natural information present in all stereo recordings.

Surround modes may be changed at any time by using either the front panel or remote control. To select a new surround mode from the front panel, first press the Surround Mode Group Selector Button **7** until the desired major surround mode group such as Dolby, DTS or Logic 7 is selected. Next, press the Surround Mode Selector Button **8** to choose the specific individual surround mode.

To select a surround mode using the remote, press the button for the major surround mode group that includes the mode you wish to choose from: Dolby **23**, DTS Surround **24**, DTS Neo:6 **30**, Logic 7 **25**, Stereo **29** or DSP Surround **11**. The first press of the button will show the current mode from that group if it is already in use, or the first available mode if you are currently using another mode. To cycle through the available modes in that group, press the button again until the desired mode appears in the Lower Display Line **B** and the on-screen display.

As the surround modes change, a green LED will light next to the current mode in the Surround Mode Indicators **31** list on the front panel.

The Dolby Digital, Dolby Digital EX and DTS 5.1, DTS-ES Matrix and DTS-ES Discrete modes may only be selected when a digital input is in use. In addition, when a digital source is present, the AVR 325 will automatically select and switch to the correct mode, regardless of the mode that has been previously selected. For more information on selecting digital sources, see the Digital Audio Playback section below.

When the 6-channel/8-channel direct inputs are in use there is no surround processing, as these inputs take the analog output signals from an optional, external DVD-Audio or SACD player, or another source device and carry them straight through to the volume control without any further digital processing.

To listen to a program in traditional two-channel stereo, using the front left and front right speakers only (plus the subwoofer, if installed and configured), press the Stereo Button **29** until SURR OFF appears in the Main Information Display **29**, or press the Surround Mode Group Selector **7** until the Stereo modes appear in the on-screen display and Lower Display Line **B**. Next, press the Surround Mode Select Button **8** until SURROUND OFF appears in the on-screen display and Lower Display Line **B**.

Digital Audio Playback

Digital audio is a major advancement over older analog surround processing systems such as Dolby Pro Logic. It delivers five discrete channels: left front, center, right front, left surround and right surround. Each channel reproduces full frequency range (20Hz to 20kHz) and offers dramatically improved dynamic range and significant improvements to signal-to-noise ratios. In addition, digital systems have the capability to deliver an additional channel that is specifically devoted to low-frequency information. This is the ".1" channel referred to when you see these systems described as "5.1," "6.1" or "7.1". The bass channel is separate from the other channels, but since it is intentionally bandwidth-limited, sound designers have given it that unique designation.

Dolby Digital

Dolby Digital is a standard part of DVD, and is available on specially encoded LD discs and satellite broadcasts and it is a part of the high-definition television (HDTV) system.

An optional, external RF demodulator is required to use the AVR 325 to listen to the Dolby Digital soundtracks available on laser discs. Connect the RF output of the LD player to the demodulator and then connect the digital output of the demodulator to the Optical or Coaxial Inputs **17** **18** **33** **36** of the AVR 325. No demodulator is required for use with DVD players or DTS-encoded laser discs.

DTS

DTS is another digital audio system that is capable of delivering 5.1 or 6.1 discrete or matrix sound field reproduction. Although both DTS and Dolby Digital are digital, they use different methods of encoding the signals, and thus they require different decoding circuits to convert the digital signals back to analog.

DTS-encoded soundtracks are available on select DVD and LD discs, as well as on special audio-only DTS discs. You may use any LD or CD player equipped with a digital output to play DTS-encoded discs with the AVR 325. All that is required is to connect the player's output to either an Optical or Coaxial Input on the rear panel **33** **36** or front panel **17** **18**.

In order to listen to DVDs encoded with DTS soundtracks, the DVD player must be compatible with the DTS signal as indicated by a DTS logo on the player's front panel. Early DVD players may not be able to play DTS-encoded DVDs. This does not indicate a problem with the AVR 325, as some players cannot pass the DTS signal through to the digital outputs. If you are in doubt as to the capability of your DVD player to handle DTS discs, consult the player's owner's manual.

NOTE: Some DVD players have a default setting that does not pass through the DTS signal. Before playing DVDs with a DTS soundtrack, make certain that the settings in your DVD player have been properly adjusted so that DTS audio is passed through. Consult the owner's manual for your DVD player for more information on making these settings.

Selecting a Digital Source

To utilize either digital mode, you must have properly connected a digital source to the AVR 325. Connect the digital outputs from DVD players, HDTV receivers, satellite systems or CD players to the Optical or Coaxial Inputs **17** **18** **33** **36**. In order to provide a backup signal and a source for analog stereo recording, the analog outputs provided on digital source equipment should also be connected to their appropriate inputs on the AVR 325 rear panel (e.g., connect the analog stereo audio output from a DVD to the DVD Audio Inputs **32** on the rear panel when you connect the source's digital outputs).

If you have not already configured an input for a digital source using the on-screen menus as shown on page 20, first select the input using the remote or front-panel controls as outlined in this manual. Next, select the digital source by pressing the Digital Select Button **17** **26** and then using the ▲/▼ Buttons **14** on the remote or the ◀/▶ Selector Buttons **10** **13** on the front panel to choose any of the

(Continued on p. 29)

Surround Mode Chart

MODE	FEATURES
Dolby Digital	Available only with digital input sources encoded with Dolby Digital data. It provides up to five separate main audio channels and a special dedicated Low-Frequency Effects channel.
Dolby Digital EX	Available when the receiver is configured for 6.1/7.1-channel operation, Dolby Digital EX is the latest version of Dolby Digital. When used with movies or other programs that have special encoding, Dolby Digital EX reproduces specially encoded soundtracks so that a full 6.1/7.1 sound field is available. When the receiver is set for 6.1/7.1 operation and a Dolby Digital signal is present, the EX mode is automatically selected. Even if specific EX encoding is not available to provide the additional channel, the special algorithms will derive a 6.1/7.1 output.
DTS 5.1	When the speaker configuration is set for 5.1-channel operation, the DTS 5.1 mode is available when DVD, audio-only music or laser discs encoded with DTS data are played. DTS 5.1 provides up to five separate main audio channels and a special dedicated low-frequency channel.
DTS-ES 6.1 Matrix DTS-ES 6.1 Discrete	When the speaker configuration is set for 6.1/7.1 operation, playback of a DTS-encoded program source will automatically trigger the selection of one of the two DTS-ES modes. Newer discs with special DTS-ES discrete encoding will be decoded to provide six discrete, full-bandwidth channels plus a separate low-frequency channel. All other DTS discs will be decoded using the DTS-ES Matrix mode, which creates a 6.1-channel sound field from the original 5.1-channel soundtrack.
Dolby Pro Logic II Movie Music Emulation	Dolby Pro Logic II is the latest version of Dolby Laboratory's benchmark surround technology that decodes full-range, discrete left, center right, right surround and left surround channels from either matrix surround-encoded programs and conventional stereo sources when an analog input is in use. The Dolby Pro Logic II Movie mode is optimized for movie soundtracks, while the Pro Logic II Music mode should be used with musical selections. The Pro Logic II Emulation mode re-creates original Pro Logic processing for those who prefer that presentation.
Logic 7 Cinema Logic 7 Music Logic 7 Enhance	Exclusive to Harman Kardon for A/V receivers, Logic 7 is an advanced mode that extracts the maximum surround information from either surround-encoded programs or conventional stereo material. Depending on the number of speakers in use and the selection made in the SURROUND SELECT menu, the "5.1" versions of Logic 7 modes are available when the 5.1 option is chosen, while the "7.1" versions of Logic 7 produce a full sound field presentation, including back surround speakers when the "6.1/7.1" option is chosen. The Logic 7 C (or Cinema) mode should be used with any source that contains Dolby Surround or similar matrix encoding. Logic 7 C delivers increased center-channel intelligibility, and more accurate placement of sounds with fades and pans that are much smoother and more realistic than with other decoding techniques. The Logic 7 M or Music mode should be used with analog or PCM stereo sources. Logic 7 M enhances the listening experience by presenting a wider front soundstage and greater rear ambience. Both Logic 7 modes also direct low-frequency information to the subwoofer (if installed and configured) to deliver maximum bass impact. The Logic 7 E (or Enhance) mode, available only when the 5.1 option is chosen, is an extension of the Logic 7 mode that is primarily used with musical programs. Logic 7 adds additional bass enhancement that circulates low frequencies in the 40Hz to 120Hz range to the front and surround speakers to deliver a less localized soundstage that appears broader and wider than when the subwoofer is the sole source of bass energy.
DTS Neo:6 Cinema DTS Neo:6 Music	These two modes are available when any analog source is playing to create a six-channel surround presentation from conventional Matrix-encoded and traditional Stereo sources. Select the Cinema version of Neo:6 when a program with any type of analog Matrix surround encoding is present. Select the Music version of Neo:6 for optimal processing when a nonencoded, two-channel stereo program is being played.
Dolby 3 Stereo	Uses the information contained in a surround-encoded or two-channel stereo program to create center-channel information. In addition, the information that is normally sent to the rear-channel surround speakers is carefully mixed in with the front-left and front-right channels for increased realism. Use this mode when you have a center channel speaker but no surround speakers.
Theater	The Theater mode creates a sound field that resembles the acoustic feeling of a standard live-performance theater.
Hall 1, Hall 2	The two Hall modes create sound fields that resemble a small (Hall 1) and medium-sized (Hall 2) concert hall.
VMAx Near VMAx Far	When only the two front-channel loudspeakers are used, Harman's patented VMAx mode delivers a three-dimensional sound space with the illusion of "phantom speakers" at the center and surround positions. The VMAx N, or "Near Field," mode should be selected when your listening position is less than five feet from the speakers. The VMAx F, or "Far Field," mode should be selected when your listening position is greater than five feet from the speakers. The VMAx modes are also available using the Headphones Output **4**. When headphones are being used, the Far Field mode will appear to push the sound field away from your ears, reducing the "inside the head" sensation often experienced when using headphones.
5-Channel Stereo 7-Channel Stereo	This mode takes advantage of multiple speakers to place a stereo signal at both the front and back of a room. Depending on whether the AVR has been configured for either 5.1 or 6.1/7.1 operation, one of these modes, but not both, is available at any time. Ideal for playing music in situations such as a party, it places the same signal at the front-left and surround-left, and front-right and surround-right speakers. The center channel is fed a summed mono mix of the in-phase material of the left and right channels.
Surround Off (Stereo)	This mode turns off all surround processing and presents the pure left- and right-channel presentation of two-channel stereo programs.

OPTICAL or COAXIAL inputs, as they appear in the Upper Display Line **A** or on-screen display. When the digital source is playing, the AVR 325 will automatically detect which type of digital data stream is being decoded and display that information in the Upper Display Line **A**.

Digital Bitstream Indicators

When a digital source is playing, the AVR 325 senses the type of bitstream data that is present. Using this information, the correct surround mode will automatically be selected. For example, DTS bitstreams will cause the unit to switch to DTS decoding, and Dolby Digital bitstreams will enable Dolby Digital decoding. When the unit senses PCM data from CDs and LDs, it will allow the appropriate surround sources to be selected manually. Since the range of available surround modes is dependent on the type of digital data that is present, the AVR 325 uses display indicators to let you know what type of signal is present. This will help you to understand the choice of modes.

To help you see which type of digital source is playing, the Surround Mode Indicators **31** in combination with the Information Display **29** also serve as bitstream indications to show which type of bitstream is present, as well as the surround mode in use, if applicable.

Dolby Digital: When the green LED next to the Dolby Digital or Dolby Digital EX mode is lit, a Dolby Digital bitstream is being received. Depending on the settings on the source player and specific surround information and number of channels on the disc, a number of surround modes are possible. For discs with full 5.1 audio, only the Dolby Digital and VMAx modes are available.

DTS: When the green LED next to the DTS logo lights, a DTS bitstream is being received. When the unit senses this type of data, only the applicable DTS mode may be used.

PCM: When the green LED next to the word DIGITAL lights, a standard Pulse Code Modulation, or PCM, signal is being received. This is the type of digital audio used by conventional compact disc and laser disc recordings. When a PCM bitstream is present, all modes except Dolby Digital and DTS are available.

MP3: When MP3 appears on the Lower Display Line **B** a compatible MPEG 1/Layer 3 digital signal is being received. This is the popular audio format used by many computer programs for recording compressed audio files. When an MP3 bitstream is present, the sound will automatically be played in the Stereo (Surround Off) mode. The surround modes are not available during MP3 playback. There are many different forms of MP3 encoding available and the format is used at a number of different bit rates. The AVR 325 may not be compatible with all forms of MP3, particularly when the data file is encoded at 128kb/s or above.

Speaker/Channel Indicators

In addition to the bitstream indicators, the AVR 325 features a set of unique channel-input indicators that tell you how many channels of digital information are being received and/or whether the digital signal is interrupted. (See Figure 9.)

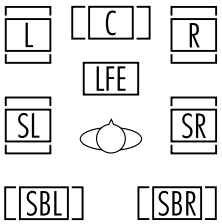


Figure 9

These indicators are the L/C/R/LFE/SL/SR/SBL/SBR letters that are inside the center boxes of the Speaker/Channel Input Indicators **E** in the front-panel Main Information Display **29**. When a standard analog signal is in use, only the "L" and "R" indicators will light, as analog signals have only left and right channels.

Digital signals, however, may have two, five, six or seven channels, depending on the program material, the method of transmission and the way in which it was encoded. When a digital signal is playing, the letters in these indicators will light in response to the specific signal being received. It is important to note that although Dolby Digital, for example, is referred to as a "5.1" system, not all Dolby Digital DVDs or programs are encoded for 5.1. Thus, it is sometimes normal for a DVD with a Dolby Digital soundtrack to trigger only the "L" and "R" indicators.

NOTE: Many DVD discs are recorded with both "5.1" and "2.0" versions of the same soundtrack. When playing a DVD, always be certain to check the type of material on the disc. Most discs show this information in the form of a listing or icon on the back of the disc jacket. When a disc does offer multiple soundtrack choices, you may have to make some adjustments to your DVD player (usually with the "Audio Select" button or in a menu screen on the disc) to send a full 5.1 feed to the AVR 325. It is also possible for the type of signal feed to change during the course of a DVD playback. In some cases, the previews of special material will only be recorded in 2.0 audio, while the main feature is available in 5.1 audio. The AVR 325 will automatically sense changes to the bitstream and channel count and reflect them in these indicators.

The letters used by the Speaker/Channel Input Indicators **E** also flash to indicate when a bitstream has been interrupted. This will happen when a digital input source is selected before the playback starts, or when a digital source such as a DVD is paused. The flashing indicators remind you that the playback has stopped due to the absence of a digital signal and not through any fault of the AVR 325. This is normal, and the digital playback will resume once the playback is started again.

Night Mode

A special feature of Dolby Digital is the Night mode, which enables specially encoded Dolby Digital input sources to be played back with full digital intelligibility while reducing the minimum peak level by 1/4 to 1/3. This prevents abruptly loud transitions from disturbing others, without reducing the impact of the digital source. The Night mode is available only when Dolby Digital signals with special data are being played.

The Night mode may be engaged when a Dolby Digital DVD is playing by pressing the Night Mode Button ⓬ on the remote. Next, press the ▲/▼ Buttons ⓮ to select either the middle range or full compression versions of the Night mode. To turn the Night mode off, press the ▲/▼ Buttons ⓮ until the message in the lower third of the video display and in the Lower Display Line **B** reads D-RANGE OFF.

The Night mode may also be selected to always be on at either level of compression using the options in the DOLBY menu. See page 20 for information on using the menus to set this option.

IMPORTANT NOTES ON DIGITAL PLAYBACK:

• When the digital playback source is stopped, or in a pause, fast forward or chapter search mode, the digital audio data will momentarily stop, and the channel position letters inside the Speaker/Channel Input Indicators **E** will flash. This is normal and does not indicate a problem with either the AVR 325 or the source machine. The AVR 325 will return to digital playback as soon as the data is available and when the machine is in a standard play mode.

• Although the AVR 325 will decode virtually all current DVD movies, CDs and HDTV sources, it is possible that some future digital sources may not be compatible with the AVR 325.

• Not all digitally encoded programs contain full 5.1- or 6.1-channel audio. Consult the program guide that accompanies the DVD or laser disc to determine which type of audio has been recorded on the disc. The AVR 325 will automatically sense the type of digital surround encoding used and adjust to accommodate it.

• When a digital source is playing, you may not be able to select some of the analog surround modes such as Dolby Pro Logic II, Dolby 3, Stereo, Hall, Theater or Logic 7.

• When a Dolby Digital or DTS source is playing, it is not possible to make an analog recording using the Tape Outputs 35 and Video 1 or Video 2 Audio Outputs 38 41. However, the digital signals will be passed through to the Digital Audio Outputs 28 30.

PCM Audio Playback
PCM (Pulse Code Modulation) is the noncompressed digital audio system used for compact discs and laser discs. It is also the format used as an output by audio transcoders such as the Harman Kardon DAL 150. The digital circuits in the AVR 325 are capable of high-quality digital-to-analog decoding, and they may be connected directly to the digital audio output of your CD or LD player.

Connections may be made to either the rear-panel Optical or Coaxial Inputs 33 36 or the front-panel Digital Inputs 17 18.

To listen to a PCM digital source, first select the input for the desired source (e.g., CD). Next press the Digital Select Button 26 17 and then use the ▲/▼ Buttons 14 on the remote, or the ◀/▶ Selector Buttons 10 13 on the front panel, until the desired choice appears in the Main Information Display 29.

During PCM playback, you may select any Surround mode except Dolby Digital or DTS.

MP3 Audio Playback
The AVR 325 is one of the few receivers equipped for onboard decoding for the MP3 audio format used by computers and portable audio devices. By offering MP3 decoding, the AVR 325 is able to deliver precise conversion of the digital signals to an analog output, along with the benefits of listening to the MP3 audio through the AVR 325's high-current amplifier and the speakers from your surround system, rather than the smaller speakers and low-powered amplifiers typically used with computers.

To take advantage of the AVR 325's MP3 capabilities, simply connect the PCM output of a computer's sound card or the PCM output of a portable digital audio device to either the rear-panel Digital Inputs 33 36 or the front-panel Digital Inputs 17 18. When the digital signal is available, the Lower Display Line B will indicate that an MP3 bitstream is present, and the audio will begin playing.

NOTES:
• The AVR 325 is only capable of playing signals in the MP3 (MPEG 1/Layer 3) format. It is not compatible with other computer audio codecs.

• The digital audio input signal may be either optical or coaxial, but the signal must be in the PCM format. Direct connection of USB or serial data outputs is not possible, even though the signals are in the MP3 format. If you have any questions about the data output format from your computer or a sound card, check with the device's owner's manual or contact the manufacturer's technical support area.

• If your computer or sound card's digital output is not capable of direct connection to the AVR 325, you may use the DAL 150, an optional, external transcoder, available from Harman Kardon, to convert the USB output of a computer to a format compatible with the AVR. Contact your Harman Kardon dealer for additional details.

• Due to the wide variation in MP3 formats and encoding speeds, it is possible that the AVR 325 may not be compatible with all MP3 input signals. Some may produce unacceptable results and some may not be decoded. This is not a fault of either the computer or the AVR 325, but rather a by-product of the unpredictable nature of MP3 playback.

Tuner Operation

The AVR 325's tuner is capable of tuning AM, FM and FM Stereo broadcast stations. Stations may be tuned manually, or they may be stored as favorite station presets and recalled from a 30-position memory.

Station Selection
1. Press the AM/FM Tuner Select Button 7 C on the remote to select the tuner as an input. The tuner may be selected from the front panel by pressing either the Input Source Selector 15 until the tuner is active or the Tuner Band Selector 11 at any time.

2. Press the AM/FM Tuner Select Button 7 C or Tuner Band Selector 11 again to switch between AM and FM so that the desired frequency band is selected.

3. Press the Tuner Mode Button 16 19 to select manual or automatic tuning.

When the AUTO Indicator J is illuminated in the Main Information Display 29 the tuner will only stop at those stations that have a strong enough signal to be received with acceptable quality.

When the AUTO Indicator J is not lit, the tuner is in a manual mode and will stop at each frequency increment in the selected band.

4. To select stations, press the Tuning Selector Button 9 21 E. When the AUTO Indicator J is lit, press the button to cause the tuner to search for the next highest- or lowest-frequency station that has an acceptable signal. Hold the Tuning Selector Button 9 21 E to scan through the stations with acceptable signals. Press the Tuner Mode Button 16 19 to switch to the manual tuning mode, in which each press of the Tuning Selector Button 9 21 E advances one frequency increment; press and hold selector button to scan through all frequency increments.

When tuning FM stations in the Auto mode, the tuner will only select stereo stations. To tune to the next station, press the button again. If the STEREO Indicator H is not lit, tap the Tuning Selector Button 9 21 E to advance one frequency increment at a time, or press and hold it to locate a specific station. When the TUNED Indicator I lights, the station is properly tuned and should be heard with clarity.

5. Stations may also be tuned directly by pressing the Direct Button 20, and then pressing the Numeric Keys 18 that correspond to the station's frequency. The desired station will automatically be tuned. If you press an incorrect button while entering a direct frequency, press the Clear Button 34 to start over.

NOTE: When the FM reception of a station is weak, audio quality will be increased by switching to Mono mode by pressing the Tuner Mode Button 16 19 until the STEREO Indicator H goes out.

Preset Tuning
Using the remote, up to 30 stations may be stored in the AVR 325's memory for easy recall using the front-panel controls or the remote.

To enter a station into the memory, first tune the station using the steps outlined above. Then:

1. Press the Memory Button 35 on the remote. The MEMORY Indicator G will light and flash in the Main Information Display 29.

2. Within five seconds, press the Numeric Keys 18 corresponding to the location where you wish to store this station's frequency. Once entered, the preset number will appear in the Main Information DIsplay 29.

3. Repeat the process after tuning any additional stations to be preset.

Recalling Preset Stations

• To manually select a station previously entered in the preset memory, press the Numeric Keys ⓲ that correspond to the desired station's memory location.

• To manually tune through the list of stored preset stations one by one, press the Preset Stations Selector Buttons 14 ㉝ Ⓖ on the front panel or remote.

Tape Recording

In normal operation, the audio or video source selected for listening through the AVR 325 is sent to the record outputs. This means that any program you are watching or listening to may be recorded simply by placing machines connected to the outputs for Tape Outputs ㉟ or Video 1/Video 2 Audio and Video Outputs ⓱⓳㊳㊶ in the Record mode.

When a digital audio recorder is connected to the Digital Audio Outputs ㉘㉚, you are able to record the digital signal using a CD-R, MiniDisc or other digital recording system.

NOTES:

- The digital outputs are active only when a digital signal is present, and they do not convert an analog input to a digital signal, or change the format of the digital signal. In addition, the digital recorder must be compatible with the output signal. For example, the PCM digital input from a CD player may be recorded on a CD-R or MiniDisc, but Dolby Digital or DTS signals may not.

- Please make certain that you are aware of any copyright restrictions on any material you copy. Unauthorized duplication of copyrighted materials is prohibited by federal law.

Output Level Trim Adjustment

Normal output level adjustment for the AVR 325 is established using the test tone, as outlined on pages 24 and 25. In some cases, however, it may be desirable to adjust the output levels using program material such as a test disc, or a selection you are familiar with. Additionally, the output level for the subwoofer can only be adjusted using this procedure.

To adjust the output levels using program material, first set the reference volume for the front left and front right channels using the Volume Control 27 ㊵ ❙.

If you are using a disc with test signals or an external signal generator as the source from which to trim the output levels, you may use the EzSet feature of the remote to guide you to the correct SPL level. To use the remote for this purpose, press and quickly release the SPL Selector Button ㊶ to activate the sensor. While the test tone is circulating, the Program/SPL Indicator ❸ will change color to indicate the level. Adjust the level using the ▲/▼ Buttons ⓮ until the LED lights green for all channels. When it is red the level is too high; when it is amber the level is too low. Press the SPL Selector Button ㊶ to turn the sensor and indicator off.

Once the reference level has been set, press the Channel Select Button ⓭ and FRONT L LEV will appear in the Lower Display Line B. To change the level, first press the Set Button ⓰, and then use the ▲/▼ Buttons ⓮ to raise or lower the level. DO NOT use the volume control, as this will alter the reference setting.

Once the change has been made, press the Set Button ⓰ and then press the ▲/▼ Buttons ⓮ to select the next output channel location that you wish to adjust. To adjust the subwoofer level, press the ▲/▼ Buttons ⓮ until WOOFER LEV appears in the Main Information Display 29 or on-screen display.

Repeat the procedure as needed until all channels requiring adjustment have been set. When all adjustments have been made and no further adjustments are made for five seconds, the AVR 325 will return to normal operation.

The channel output for any input may also be adjusted using the full-OSD on-screen menu system. First, set the volume to a comfortable listening level using the Volume Control 27 ㊵ ❙. Then, press the OSD Button ㉒ to bring up the MASTER MENU (Figure 1). Press the ▼ Button ⓮ until the on-screen ▶ cursor is next to the CHANNEL ADJUST line. Press the Set Button ⓰ to activate the CHANNEL ADJUST menu.

Once the menu appears on your video screen, first use the ▲/▼ Buttons ⓮ to move the on-screen ▶ cursor so that it is next to the TEST TONE line. Press the ◀/▶ Buttons ⓯ ㊲ so that OFF is highlighted. This will turn off the test tone and allow you to use your external test disc or other source material as the reference. Then, use the ▲/▼ Buttons ⓮ to select the channels to be adjusted. At each channel position, use the ◀/▶ Buttons ⓯ ㊲ to change the output level. Remember, the goal is to have the output level at each channel be equal when heard at the listening position.

If you wish to reset all the levels to their original factory default of 0dB offset, press the ▲/▼ Buttons ⓮ so that the on-screen cursor is next to the CHANNEL RESET line and press the ◀/▶ Buttons ⓯ ㊲ so that the word ON is highlighted. After the levels are reset, resume the procedure outlined above to reset the levels to the desired settings. When all adjustments are done, press the ▲/▼ Buttons ⓮ to move the on-screen ▶ cursor so that it is next to BACK TO MASTER MENU and then press the Set Button ⓰ if you wish to go back to the main menu to make other adjustments. If you have no other adjustments to make, press the OSD Button ㉒ to exit the menu system.

NOTE: The output levels may be separately trimmed for each digital and analog surround mode. If you wish to have different trim levels for a specific mode, select that mode and then follow the instructions in the steps shown earlier.

Memory Backup

This product is equipped with a memory backup system that preserves the system configuration information and tuner presets if the unit is accidentally unplugged or subjected to a power outage. This memory will last for approximately two weeks, after which time all information must be reentered.

The AVR 325 is equipped with a number of advanced features that add extra flexibility to the unit's operation. While it is not necessary to use these features to operate the unit, they provide additional options that you may wish to use.

Surround Amplifier Channel Assignment

The AVR 325 is equipped with seven full-power amplifier channels to allow for complete 7.1-channel operation without the need for additional external amplifiers. However, in some installations you may wish to use the traditional 5.1-channel configuration for the main listening room, which allows the surround back left/right amplifier channels to be used to power speakers placed in a remote zone location.

If you wish to use the Surround Back channel amplifiers to power the remote zone, you must change a setting in the ADVANCED SELECT menu. To make that change, first call up the menu system by pressing the OSD Button 22 to bring the MASTER MENU (Figure 1) to the screen. Next, press the ▼ Button 14 until the ▶ cursor is next to the ADVANCED line. Press the Set Button 16 to enter the ADVANCED SELECT menu (Figure 10).

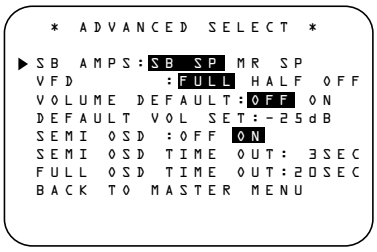

* ADVANCED SELECT *
▶SB AMPS:SB SP MR SP
VFD :FULL HALF OFF
VOLUME DEFAULT:OFF ON
DEFAULT VOL SET:-25dB
SEMI OSD :OFF ON
SEMI OSD TIME OUT: 3SEC
FULL OSD TIME OUT:20SEC
BACK TO MASTER MENU

Figure 10

To change the setting so that the Surround Back amplifiers are fed by the source selected through the Multiroom system, press the ◀/▶ Buttons 15 37 so that MR SP is highlighted in reverse video and press the Set Button 16.

Remember that once this setting is made you will not be able to take advantage of any of the 6.1/7.1-channel decoding or processing modes, and that the speakers used for the remote zone must be connected to the Surround Back/Multiroom Speaker Outputs 10. The volume for these speakers is set by the multiroom system, as explained on page 34 of this manual.

Once this setting is made, you may press the ▼ Button 14 to make any of the other adjustments available on this menu. If no other adjustments are needed, press the OSD Button 22 to exit the menu system.

Display Brightness

The AVR 325's Main Information Display 29 is set at a default brightness level that is sufficient for viewing in a normally lit room. However, in some home theater installations, you may wish to occasionally lower the brightness of the display, or turn it off completely.
To change the display brightness setting for a specific listening session, you will need to make an adjustment in the ADVANCED SELECT menu. To start the adjustment, press the OSD Button 22 to bring the MASTER MENU to the screen. Press the ▼ Button 14, until the on-screen ▶ cursor is next to the ADVANCED line. Press the Set Button 16 to enter the ADVANCED SELECT menu (Figure 10).

To change the brightness setting, at the ADVANCED SELECT menu, make certain that the on-screen ▶ cursor is next to the VFD line, and press the ▶ Button 37 until the desired brightness level is highlighted in the video display. When FULL is highlighted, the display is at its normal brightness. When HALF is highlighted, the display is at half the normal brightness level. When OFF is highlighted, all of the indicators in the Main Information Display 29 will go dark. However, the green LEDs for the Input Indicators 28 and the Surround Mode Indicators 31, as well as for the Power Indicator 3, will always remain lit to remind you that the unit is turned on.

Once the desired brightness level is selected, it will remain in effect until it is changed again or until the unit is turned off.

If you wish to make other adjustments, press the ▲/▼ Buttons 14 until the on-screen ▶ cursor is next to the desired setting or the BACK TO MASTER MENU line and press the Set Button 16. If you have no other adjustments to make, press the OSD Button 22 to exit the menu system.

Turn-On Volume Level

As is the case with most audio/video receivers, when the AVR 325 is turned on, it will always return to the volume setting in effect when the unit was turned off. However, you may prefer to always have the AVR 325 turn on at a specific setting, regardless of what was last in use when the unit was turned off. To change the default condition so that the same volume level is always used at turn-on, you will need to make an adjustment in the ADVANCED SELECT menu. To start the adjustment, press the OSD Button 22 to bring the MASTER MENU (Figure 1) to the screen. Press the ▼ Button 14, until the on-screen ▶ cursor is next to the ADVANCED line. Press the Set Button 16 to enter the ADVANCED SELECT menu (Figure 10).

At the ADVANCED SELECT menu make certain that the on-screen ▶ cursor is next to the VOLUME DEFAULT line by pressing the ▲/▼ Buttons 14 as needed. Next, press the ▶ Button 37 so that the word ON is highlighted in the video display. Next, press the ▼ Button 14 once so that the on-screen ▶ cursor is next to the DEFAULT VOL SET line. To set the desired turn-on volume, press the ◀/▶ Buttons 15 37 until the desired volume level is shown on the DEFAULT VOL SET line. This setting may NOT be made with the regular volume controls.

NOTE: Since the setting for the turn-on volume cannot be heard while the setting is being made, you may wish to determine the setting before making the adjustment. To do this, listen to any source and adjust the volume to the desired level using the regular Volume Controls 27 40 ❙. When the desired volume level to be used at turn-on is reached, make a note of the setting as it appears in the lower third of the video screen or in the Lower Display Line B. (A typical volume level will appear as a negative number such as –25dB.) When making the adjustment, use the ◀/▶ Buttons 15 37 to enter this setting.

Unlike some of the other adjustments in this menu, the turn-on volume default will remain in effect until it is changed or turned off in this menu, even when the unit is turned off.

If you wish to make other adjustments, press the ▲/▼ Buttons 14 until the on-screen ▶ cursor is next to the desired setting or the BACK TO MASTER MENU line and press the Set Button 16. If you have no other adjustments to make, press the OSD Button 22 to exit the menu system.

Semi-OSD Settings

The semi-OSD system places one-line messages at the lower third of the video display screen whenever the Volume, Input Source, Surround mode or tuner frequency of any of the configuration settings are changed. The semi-OSD system is helpful in that it enables you to have feedback on any control changes or remote commands using the video display when it is difficult to view the front-panel displays. However, you may occasionally prefer to turn these displays off for a particular listening session. You may also want to adjust the length of time the displays remain on the screen. Both of those options are possible with the AVR 325.

To turn off the semi-OSD system, you'll need to make an adjustment in the ADVANCED SELECT menu (Figure 10). To start the adjustment, press the OSD Button (22) to bring the MASTER MENU to the screen. Press the ▼ Button (14), until the on-screen ▶ cursor is next to the ADVANCED line. Press the Set Button (16) to enter the ADVANCED SELECT menu.

At the ADVANCED SELECT menu, make certain that the on-screen ▶ cursor is next to the SEMI OSD DEFAULT line by pressing the ▲/▼ Buttons (14) as needed. Next, press the ▶ Button (37) so that the word OFF is highlighted in the video display.

This setting is temporary and will remain active only until it is changed or until the AVR 325 is turned off. Once the unit is turned off, the semi-OSD displays will remain activated, even if they were switched off for the previous listening session.

To change the length of time that the semi-OSD displays remain on the screen, go to the ADVANCED SELECT menu as outlined earlier, and press the ▲/▼ Buttons (14) as needed, until the on-screen ▶ cursor is next to the SEMI OSD TIME OUT line. Next, press the ◀/▶ Buttons (15) (37) until the desired time in seconds is displayed. Unlike most of the other options in this menu, this is a permanent setting change, and the time-out entry will remain in effect until it is changed, even when the unit is turned off.

If you wish to make other adjustments, press the ▲/▼ Buttons (14) until the on-screen ▶ cursor is next to the desired setting or the BACK TO MASTER MENU line and press the Set Button (16). If you have no other adjustments to make, press the OSD Button (22) to exit the menu system.

Full-OSD Time-Out Adjustment

The FULL OSD menu system is used to simplify the setup and adjustment of the AVR 325, using a series of on-screen menus. The factory default setting for these menus leaves them on the screen for 20 seconds after a period of inactivity before they disappear from the screen (Time-Out). Time-Out is a safety measure to prevent image retention of the menu text in your monitor or projector, which might happen if it were left on indefinitely. However, some viewers may prefer a slightly longer or shorter period before the Time-Out display.

To change the full-OSD Time-Out, you will need to make an adjustment in the ADVANCED SELECT menu (Figure 10). To start the adjustment, press the OSD Button (22) to bring the MASTER MENU to the screen. Press the ▼ Button (14), until the on-screen ▶ cursor is next to the ADVANCED line. Press the Set Button (16) to enter the ADVANCED menu (Figure 10).

At the ADVANCED SELECT menu (Figure 10) make certain that the on-screen ▶ cursor is next to the FULL OSD TIME OUT line by pressing the ▲/▼ Buttons (14) as needed. Next, press the ◀/▶ Buttons (15) (37) until the desired time is displayed in seconds. Unlike most of the other options in this menu, this is a permanent setting change, and the Time-Out entry will remain in effect until it is changed, even if the unit is turned off.

If you wish to make other adjustments, press the ▲/▼ Buttons (14) until the on-screen ▶ cursor is next to the desired setting or the RETURN TO MASTER MENU line and press the Set Button (16). If you have no other adjustments to make, press the OSD Button (22) to exit the menu system.

The AVR 325 is fully equipped to operate as the control center for a complete multiroom system that is capable of sending one source to a second zone in the house while a separate source is listened to in the main room. In addition to providing for control over the selection of the remote source and its volume, the AVR 325 offers a comprehensive range of options for powering the speakers in the second zone.

- Using the line-level Multiroom Audio Outputs 29, the selected source may be fed to optional, external power amplifiers that may be matched to the specifics of the installation.
- When the main room system is configured for 5.1 operation, the Surround Back Left/Right amplifier channels may be used to power the remote zone so that no additional amplifiers are required.
- Using built-in A-BUS Ready technology, optional A-BUS modules may be connected to the AVR 325 via a single Category 5 wire, so that remote zone speakers may be powered directly from the module or keypad without the need for additional power, IR sensor or volume control wires to be run to the second zone.

In addition, the AVR 325 includes a remote IR sensor input so that remote control commands from the Zone II remote included with the unit may be transmitted to the unit, while standard IR input/output jacks allow the remote zone's commands to be sent to compatible IR-controlled source devices.

Installation

Although simple remote room systems may be installed by the average do-it-yourself hobbyist, the complexity of your multizone/multiroom system involves running wires inside of walls where the services of a specially trained installer may be required. Regardless of who does the work, please remember that local building codes may govern in-wall electrical work, including proper specification of any wiring used and the way in which it is connected. You are responsible for making certain that all multiroom installation work is done properly and in compliance with all applicable codes and regulations.

For standard installations, follow the instructions shown on page 16 for the connection of speaker wire and IR remote wiring to the AVR 325.

For installations where the Surround Back Left/Right amplifier channels are used to power the remote zone, make certain that the system is configured for that type of operation, as shown on page 22.

For installations where A-BUS modules are used, follow the instructions provided with the A-BUS remote modules or keypads. Additional information will also be made available through the Harman Kardon Web site at www.harmankardon.com.

RS-232 Control

The AVR 325 is rare among A/V receivers in that it provides the capability for full remote control from compatible computers or specialized remote control systems. RS-232 programming requires specialized programming knowledge and for that reason we recommend that it only be done by qualified installers. For more information on using the RS-232 port for remote control, visit the Harman Kardon Web site at www.harmankardon.com or contact our customer service department.

Multiroom Setup

Once the audio and IR link connections have been made, the AVR 325 needs to be configured for multiroom operation. Press the OSD Button 22 to bring the MASTER MENU (Figure 1) to the screen. Press the ▼ Button 14, until the on-screen ▶ cursor is next to the MULTI-ROOM line. Press the Set Button 16 to enter the MULTI-ROOM menu (Figure 11).

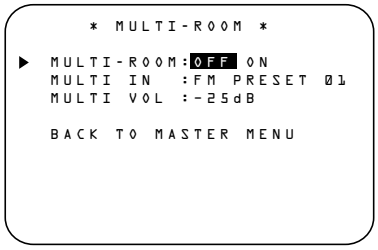


Figure 11

When the MULTI-ROOM menu appears, the on-screen ▶ cursor will be at the MULTI-ROOM line. Since this line is used to turn the system on and off, don't make an adjustment here unless you wish to turn the system on at this time. To turn the system on, press the ▶ Button 37 so that ON is highlighted. If you do not wish to turn the system on at this time, or to proceed to the next step, press the ▼ Button 14 once so that the ▶ on-screen cursor is next to the MULTI IN line.

At the MULTI IN line, press the ◀/▶ Buttons 15 37 until the desired input to the multiroom system appears in the highlighted video. When the selection has been made, press the ▼ Button 14 once so that the ▶ on-screen cursor is next to the MULTI VOL line.

At the MULTI VOL line, press the ◀/▶ Buttons 15 37 until the desired volume level for the multiroom system is entered. DO NOT use the regular volume control knobs for this setting. When all settings for the multiroom setup have been made, press the ▲/▼ Buttons 14 until the on-screen ▶ cursor is next to the BACK TO MASTER MENU line. If you have no other adjustments to make, press the OSD Button 22 to exit the menu system.

Multiroom Operation

When operating the AVR 325 from a remote room location where an IR sensor link has been connected to the AVR 325's rear-panel Multiroom IR Input 25, you may use either the main remote control or the Zone II remote. To turn on the multiroom feed, press any of the Input Selector buttons on the Zone II remote C D or the main remote 5 7. Press the AVR Selector 6 B to turn the unit on to the last source, or any of the other Selector buttons to turn on to a specific source.

As long as an IR feed to the AVR 325 has been established from the remote room, using any of the buttons on either remote will control the remote location volume 40 I, change the tuner frequency 21 E, change the tuner preset 33 G or mute the output 43 ●.

If the Remote IR Output Jack 27 on the AVR 325 is connected to an IR Input jack on compatible Harman Kardon audio components such as CD, DVD or cassette players, the transport functions of those machines may also be controlled using the Transport Controls 27 F H J on either remote control.

To turn the system off from the remote room, press the Power Off Button 1 A. Remember that the AVR 325 may be turned on or off from the remote room, regardless of the system's operation or status in the main room.

NOTE: When the tuner is selected as the source for the remote zone, any change to the frequency or preset will also change the station being listened to in the main room, if the tuner is in use there. Similarly, if someone in the main room changes the station, the change will also impact the remote room.

To activate the feed to the remote room, while you are in the main listening room where the AVR 325 is located, press the Multiroom Button 39 on the remote. Next, press the Set Button 16. Press the ▲/▼ Buttons 14 to turn the multiroom feed on or off. When the multiroom system is on, the Multiroom Indicator D will light in the Main Information Display 29, and the Lower Display Line B or OSD will display MULTI ON. Press the Set Button 16 to enter the setting.

When the multiroom system is turned on, the input selected using the multiroom menu will be fed to the Multiroom Audio Outputs 29 on the rear panel as well as the A-BUS Jack 5. The volume will be as set in the previous selection, although it may also be adjusted using an optional IR sensor and the Zone II remote in the remote location, or the A-BUS keypad, or on the optional audio power amplifier connected to the Multiroom Audio Outputs 29.

Once the multiroom system is turned on, it will remain on even if the AVR 325 is placed in the Standby mode in the main room by pressing the Power Off Button A or the System Power Control 2 on the front panel. To turn off the multiroom system, even when the AVR is in Standby mode in the main listening room, press the Multiroom Button 39 and then the Set Button 16. Press the ▲/▼ Buttons 14 so that the Multiroom Indicator D in the Main Information Display 29 goes out, and the Main Information Display 29 or OSD will display MULTI OFF. Press the Set Button 16 to enter the setting and turn the unit off.

Even when the AVR 325 is turned off in the main room, the multiroom system may be turned on at any time by pressing the Multiroom Button 39, or any of the Selector Buttons BCD in the remote room.

The AVR 325 is equipped with a powerful remote control that will control not only the receiver's functions, but also most popular brands of audio and video equipment, including CD players, cassette decks, TV sets, cable boxes, VCRs, satellite receivers and other home theater equipment. Once the AVR 325's remote is programmed with the codes for the products you own, it is possible to eliminate most other remotes and replace them with the convenience of a single, backlit universal remote control.

Programming the Remote

The AVR 325 remote is factory-programmed for all AVR functions, as well as those of most Harman Kardon CD changers, DVD players, CD players and cassette decks. In addition, by following one of the methods below, you may program the remote to operate a wide range of devices from other manufacturers.

Direct Code Entry

This method is the easiest way to program your remote to work with different products.

1. Use the tables in the following pages to determine the three-digit code or codes that match both the product type (e.g., VCR, TV) and the specific brand name. If there is more than one number for a brand, make note of the different choices.
2. Turn on the unit you wish to program into the AVR 325 remote.
3. Press and hold both the Input Selector ❺ for the product you wish to control (e.g., VCR, TV) and the Mute Button ㊸ at the same time. When the red light under the Input Selector ❺ stays lit and the Program/SPL Indicator ❸ turns amber and begins flashing, release the buttons. It is important that you begin the next step within 20 seconds.
4. Point the AVR 325's remote toward the unit to be programmed, and enter the first three-digit code using the Numeric Keys ⓲. If the unit turns off, the correct code has been entered. Press the Input Selector ❺ again, and note that the red light will flash three times before going dark to confirm the entry.
5. If the device to be programmed in does NOT turn off, continue to enter three-digit codes until the equipment turns off. At this point, the correct code has been entered. Press the Input Selector ❺ again and note that the red light under the Input Selector ❺ will flash three times before going dark to confirm the entry.
6. Try all of the functions on the remote to make certain that the product operates properly. Keep in mind that many manufacturers use a number of different combinations of codes, so it is a good idea to make certain that not only the power control, but the volume, channel and transport controls work as they should. If functions do not work properly, you may need to use a different remote code.
7. If a code cannot be entered to turn the unit off, if the code for your product does not appear in the tables in this manual, or if not all functions operate properly, try programming the remote with the Auto Search Method.

Auto Search Method

If the unit you wish to include in the AVR 325's remote is not listed in the code tables in this manual or if the code does not seem to operate properly, you may wish to program the correct code using the Auto Search method that follows:

1. Turn on the unit that you wish to include in the AVR 325 remote.
2. Press the Input Selector ❺ for the type of product to be entered (e.g., VCR, TV) and the Mute Button ㊸ at the same time. Hold both buttons until the red light under the Input Selector ❺ stays lit and the Program/SPL Indicator ❸ turns amber and begins flashing. The next step must take place while the red light is on, and it must begin within 20 seconds after the light appears.
3. Point the AVR 325 remote toward the unit to be programmed, and press either the ▲ or ▼ Button ⓮. Each press will send out a series of codes from the remote's built-in database. When the unit being programmed turns off, release the ▲/▼ Button ⓮, as that is your indication that the correct code is in use.
4. Press the Input Selector ❺; the red light under the Input Selector will flash three times before going dark to confirm the entry.
5. Try all of the functions on the remote to make certain that the product operates. Keep in mind that many manufacturers use a number of different combinations of codes, and it is a good idea to make certain that not only the power control works, but also the volume, channel and transport controls, as appropriate. If all functions do not work properly, you may need to Auto-Search for a different code, or enter a code via the Direct Code Entry method.

Code Readout

When the code has been entered using the Auto Search method, it is always a good idea to find out the exact code so that it may be easily reentered if necessary. You may also read the codes to verify which device has been programmed to a specific Control Selector button.

1. Press and hold both the Input Selector ❺ for the device you wish to find the code for and the Mute Button ㊸ at the same time. The Program/SPL Indicator ❸ will turn amber and begin flashing, and the red light under the Input Selector ❺ will stay lit. Release the buttons and begin the next step within 20 seconds.
2. Press the Set Button ⓰. The Program/SPL Indicator ❸ will then blink green in a sequence that corresponds to the three-digit code, with a one-second pause between each digit. Count the number of blinks between pauses to determine the digit of the code. One blink is the number 1, two blinks is the number 2, and so forth. Ten blinks are used to indicate a "0."

Example: One blink, followed by a one-second pause, followed by six blinks, followed by a one-second pause, followed by ten blinks indicates that the code has been set to 160.

For future reference, enter the setup codes for the equipment in your system here:

DVD _____ CD _____

VID1/VCR _____ VID2/TV _____

VID3/CBL _____ VID3/SAT _____

VID4 _____ TAPE_____

Learning Codes

In addition to using codes from the remote's internal code library, the AVR 325's remote is able to "learn" codes from remotes that may not be in the code library. In addition, you may use this function to "learn over" the codes from a preprogrammed device to add functions not included in the preprogrammed codes. To learn or transfer codes from an IR remote to the AVR 325's remote, follow these steps:

1. Place the front of the original remote with the code being sent so that it is facing the IR Transmitter Window ❷ on the AVR 325 remote "head-to-head." The remotes should be between one and three inches apart.
2. Select the button on the remote that you wish to use as the device selector for the codes about to be entered. This may be any of the Input Selectors ❺.
3. Press the Input Selector ❺ button chosen and the Learn Button ㊷ at the same time. Hold these buttons until the Program/SPL Indicator ❸ flashes amber and the light under the device selector button turns red. Release the buttons.

4. Press the button on the AVR 325 remote that you wish to program. The Program/SPL Indicator ❸ will stop flashing.

5. Within five seconds, press and hold the button on the original remote that you wish to "teach" into the AVR 325 remote. When the Program/SPL Indicator ❸ turns green three times, release the button. The Program Indicator will then begin to flash amber again.

   NOTE: If the Program/SPL Indicator ❸ turns red during Step 5, the programming was not successful. Repeat the steps to see whether the code will "take."

6. Repeat Steps 4 though 6 for each button on the source remote that you wish to transfer to the AVR 325 remote.

7. Once all codes have been transferred from the original source remote to the AVR 325 remote, press the Learn Button ❹❷ .

8. Repeat Steps 1 through 7 for any additional remotes you wish to "teach" into the AVR 325 remote.

Erasing Learned Codes

The AVR 325's remote allows you to remove or erase the code learned into a single button for a single device, to remove or erase the code set for all the codes that have been programmed into specific device buttons, or to erase all commands that have been learned to all devices.

To erase a single learned code from within a single device's settings, follow these steps:

1. Press and hold both the Input Selector ❺ within which the individual button to be erased has been programmed and the Learn Button ❹❷ .

2. When the red LED under the Input Selector turns red and the Program/SPL Indicator ❸ flashes amber, release the buttons.

3. Press and release the Input Selector ❺ again for the device within which the individual button to be erased has been programmed.

4. Press the 7 Button ❶❽ four times.

5. Press and release the individual button for which the code is to be erased. The Program/SPL Indicator ❸ will blink green two times and then return to amber.

6. To erase other buttons within the same device, press them as described in Step 5.

7. When all buttons to be erased have been pressed, press the Learn Button ❹❷ to complete the process.

To erase all codes within a single device, follow these steps:

1. Press and hold both the Input Selector ❺ for which you wish to erase the codes and the Learn Button ❹❷ .

2. When the red LED under the Input Selector turns red and the Program/SPL Indicator ❸ flashes amber, release the buttons.

3. Press and release the Input Selector ❺ again for the device whose codes you wish to erase.

4. Press the 8 Button ❶❽ four times.

5. The Program/SPL Indicator ❸ will turn off and the red light under the Input Selector will flash on and off once to indicate that the codes have been erased.

To erase all codes that have been programmed to all devices in the remote, follow these steps:

1. Press any Input Selector ❺ for which you wish to erase the codes and also the Learn Button ❹❷ .

2. When the red LED under the Input Selector turns red and the Program/SPL Indicator ❸ flashes amber, release the buttons.

3. Press and release the Input Selector ❺ again for the device whose codes you wish to erase.

4. Press the 9 Button ❶❽ four times.

5. The Program/SPL Indicator ❸ will turn off and the red light under the Input Selector will flash on and off once to indicate that the codes have been erased.

Macro Programming

Macros enable you to easily repeat frequently used combinations of commands with the press of a single button on the AVR 325's remote control. Once programmed, a macro will send out up to 19 different remote codes in a predetermined sequential order enabling you to automate the process of turning on your system, changing devices, or other common tasks. The AVR 325's remote can store up to five separate macro command sequences: one that is associated with the Power On Button ❶ and four more that are accessed by pressing the Macro Buttons ❸❶.

1. Press the Mute Button ❹❸ and the Macro Button ❸❶ to be programmed or the Power On Button ❶ at the same time. An Input Selector ❺❻ will light red, and the Program/SPL Indicator ❸ will flash amber.

2. Enter the steps for the macro sequence by pressing the button for the actual command step. Although the macro may contain up to 19 steps, each button press, including those used to change devices, counts as a step. The Program/SPL Indicator ❸ will flash green to confirm each button press as you enter commands.

NOTE: While entering commands for Power On/Off of any device during a macro sequence, press the Mute Button ❹❸. DO NOT press the actual Power button.

3. When all the steps have been entered, press the Sleep Button ❿ to enter the commands. The red light under the Input Selectors ❺❻ will blink and then turn off.

   Example: To program the Macro 1 button so that it turns on the AVR 325, TV and a cable box, follow these steps:

   - Press the Macro 1 Button ❸❶ and Mute Button ❹❸ at the same time and then release them.
   - Note that the Program/SPL Indicator ❸ will flash amber.
   - Press the AVR Selector ❻.
   - Press the Mute Button ❹❸ to store the AVR 325's Power On command.
   - Press the VID 2 Input Selector Button ❺ to indicate the next command is for "TV Power On."
   - Press the Mute Button ❹❸ to store the TV Power On Command.
   - Press the VID 3 Input Selector Button ❺ to indicate the next command is for "Cable Power On."
   - Press the Mute Button ❹❸ to store the Cable Power On command.
   - Press the Sleep/Channel Up Button ❿ to complete the process and store the macro sequence.

   After following these steps, each time you press the Macro 1 Button ❸❶, the remote will send the Power On/Off command.

Erasing Macro Commands

To remove the commands that have been programmed into one of the Macro buttons, follow these steps:

1. Press the Mute Button 43 and the Macro Button 31 that contains the commands you wish to erase.
2. The Program/SPL Indicator 3 will flash amber, and the LED under the AVR Selector 6 will turn red.
3. Within ten seconds, press the Surround Mode Selector/Channel Down Button 11.
4. The red LED under the AVR Selector 6 will go out, and the Program/SPL Indicator 3 will turn green and flash three times before it goes out.
5. When the Program/SPL Indicator 3 goes out, the Macro has been erased.

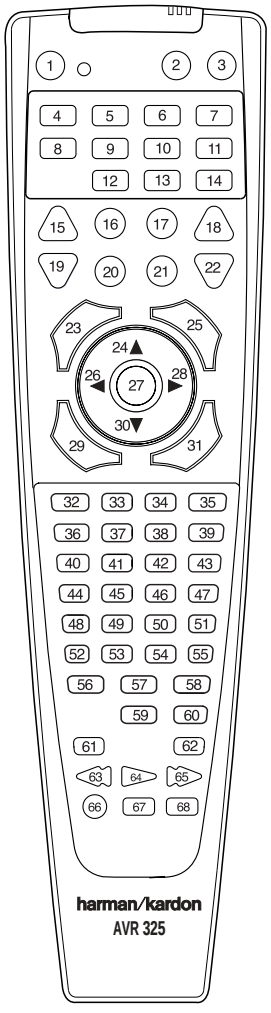


Figure 12

Programmed Device Functions

Once the AVR 325's remote has been programmed for the codes of other devices, press the appropriate Input Selector 5 to change the remote from controlling the AVR 325 to controlling the additional product. When you press any one of the selectors, it will briefly flash in red to indicate that you have changed the device being controlled.

When operating a device other than the AVR 325, the controls may not correspond exactly to the function printed on the remote or button. Some commands, such as the volume control, are the same as they are with the AVR 325. Other buttons will change their function so that they correspond to a secondary label on the remote. For example, the Sleep and Surround mode selector buttons also function as the Channel Up and Channel Down buttons when operating most TV sets, VCRs or cable boxes. The Channel Up/Down indication is printed directly on the remote. For many standard CD players, cassette decks, VCRs and DVD functions, the standard function icons are printed on top of the buttons.

For some products, however, the function of a particular button does not follow the command printed on the remote. In order to see which function a button controls, consult the Function List tables on pages 40 and 41. To use those tables, first check the type of device being controlled (e.g., TV, VCR). Next, look at the remote control diagram in Figure 12. Note that each button has a number on it.

To find out what function a particular button has for a specific device, find the button number on the Function List and then look in the column for the device you are controlling. For example, button number 45 is the Direct button for the AVR 325, but it is the "Favorite" button for many cable television boxes and satellite receivers. Button number 31 is the Delay button for the AVR 325, but the Open/Close button for CD players.

NOTE: The numbers used to describe the button functions in Figure 12 for the purposes of describing how a button operates are a different set of numbers than those used in the rest of this manual to describe the button functions for the AVR 325.

Notes on Using the AVR 325 Remote With Other Devices.

- Manufacturers may use different code sets for the same product category. For that reason, it is important that you check to see whether the code set you have entered operates as many controls as possible. If it appears that only a few functions operate, check to see whether another code set will work with more buttons.
- When a button is pressed on the AVR 325 remote, the red light under the Input Selector 5 6 for the product being operated should flash briefly. If the Device Control Selector flashes for some but not all buttons for a particular product, it does NOT indicate a problem with the remote but rather that no function is programmed for the button being pushed.

Volume Punch-Through

The AVR 325's remote may be programmed to operate the Volume Control 40 and Mute 43 functions of either the TV or the AVR 325 in conjunction with any of the devices controlled by the remote. For example, since the AVR 325 will likely be used as the sound system for TV viewing, you may wish to have the AVR 325's volume activated, although the remote is set to run the TV. Either the AVR 325 or TV volume control may be associated with any of the remote's devices. To program the remote for Volume Punch-Through, follow these steps:

1. Press the Input Selector 5 for the unit you wish to have associated with the volume control and the Mute Button 43 at the same time until the red light appears under the Input Selector 5; the Program/SPL Indicator 3 will flash amber.
2. Press the Volume Up Button 40; the Program/SPL Indicator 3 will stop flashing and stay amber.
3. Press either the AVR Selector 6 or the Input Selector 5, depending on which system's volume control you wish to have attached for the punch-through mode. The Program/SPL Indicator 3 will blink green three times and then go out to confirm the data entry.

   Example: To have the AVR 325's volume control activated even though the remote is set to control the TV, first press the Video/TV Input Selector 5 and the Mute Button 43 at the same time. Next, press the Volume Up Button 40, followed by the AVR Selector 6.

NOTE: Should you wish to return the remote to the original configuration after entering a Volume Punch-Through, you will need to repeat the steps shown above. However, press the same Input Selector in Steps 1 and 3.

Channel Control Punch-Through

The AVR 325's remote may be programmed to operate so that the channel control function for either the TV, cable or satellite receiver used in your system may be used in conjunction with one of the other devices controlled by the remote. For example, while using and controlling the VCR, you may wish to change channels on a cable box or satellite receiver without having to change

the device selected by the AVR 325 or the remote. To program the remote for Channel Control Punch-Through, follow these steps:

1. Press the Input Selector Button 5 6 for the device you wish to have the channel control associated with and the Mute Button 43 at the same time until the red light appears under the Input Selector 5 6 and the Program/SPL Indicator 3 flashes amber.
2. Press the Volume Down Button 40. The Program/SPL Indicator 3 will stop flashing and stay amber.
3. Press and release the Input Selector Button 5 for the device that will be used to change the channels. The Program/SPL Indicator 3 will blink green three times and then go out to confirm the data entry.

   Example: To control the channels using your cable box or satellite receiver while the remote is set to control the VCR, first press the VID 1/VCR Input Selector Button 5 and the Mute Button 43 at the same time. Next, release them and press the Volume Down Button 40, followed by the VID 2/TV Input Selector Button 5.

NOTE: To remove the Channel Control Punch-Through and return the remote to its original configuration, repeat the steps shown in the example above. However, press the same Input Selector in Steps 1 and 3.

Transport Control Punch-Through

The AVR 325's remote may be programmed to operate so that the Transport Control Functions 27 (Play, Stop, Fast Forward, Rewind, Pause and Record) for a VCR, DVD or CD will operate in conjunction with one of the other devices controlled by the remote. For example, while using and controlling the TV, you may wish to start or stop your VCR or DVD without having to change the device selected by the AVR 325 or the remote. To program the remote for Transport Control Punch-Through, follow these steps:

1. Press the Input Selector 5 6 for the device you wish to have the channel control associated with and the Mute Button 43 at the same time until the red light appears under the Input Selector 5 and the Program/SPL Indicator 3 flashes amber.
2. Press the Play Button 27. The Program/SPL Indicator 3 will stop flashing and stay amber.
3. Press and release the Input Selector Button 5 for the device that will be used to change the channels. The Program/SPL Indicator 3 will blink green three times and then go out to confirm the data entry.

   Example: To control the transport of a DVD player while the remote is set to control the TV, first press the VID 2/TV Input Selector Button 5 and the Mute Button 43 at the same time. Next, release them and press the Play Button 27, followed by the DVD Input Selector Button 5.

NOTES:

- To remove the Channel Control Punch-Through and return the remote to its original configuration, repeat the steps in the example above. However, press the same Input Selector in Steps 1 and 3.
- Before programming the remote for Volume, Channel or Transport Punch-Through, make certain that any programming needed for the specific TV, CD, DVD, cable or satellite receivers has been completed.

Reassigning Device Control Selectors

Although each Input Selector 5 is normally assigned to the category of product shown on the remote, it is possible to reassign one of these buttons to operate a second device of another type. For example, if you have two VCRs but no satellite receiver, you may program the "SAT" button to operate a second VCR. Before following the normal programming steps for either Three-Digit entry or Auto Search code entry, you must first reassign the button with the following steps:

1. Press the Input Selector 5 you wish to reassign and the Mute Button 43 at the same time until the red light appears under the Input Selector 5 and the Program/ SPL Indicator 3 flashes amber.
2. Press the Input Selector 5 for the device you wish to program into the reassigned button.
3. Enter the three-digit code for the specific model you wish the reassigned button to operate.
4. Press the same Input Selector 5 pressed in Step 1 once again to store the selection. The red LED under the reassigned Input Selector will flash three times and then go out.

   Example: To use the CBL/SAT button to operate a second VCR, first press the CBL/SAT Input Selector 5 and the Mute Button 43 at the same time until the red light glows under the CBL/SAT Button 5. Press the VCR Button 5, followed by the three-digit code for the specific model you wish to control. Finally, press the CBL/SAT Button 5 again.

Resetting the Remote Memory

As you add components to your home theater system, occasionally you may wish to totally reprogram the remote control without the confusion of any commands, macros or "Punch-Through" programming that you may have done. To do this, it is possible to reset the remote to the original factory defaults and command codes by following these steps. However, once the remote is reset, all commands or codes that you have entered will be erased and will need to be reentered:

1. Press any of the Input Selector Buttons 5 and the "0" Button 18 at the same time until the Program/SPL Indicator 3 begins to flash amber.
2. Press the "3" Button 18 three times.
3. The red LED under the Input Selector 5 will go out and the Program/SPL Indicator 3 will stop flashing and turn green.
4. The Program/SPL Indicator 3 will remain green until the remote is reset. Note that this may take a while, depending on how many commands are in the memory that need to be erased.
5. When the Program/SPL Indicator 3 goes out, the remote has been reset to the factory settings.

FUNCTION LIST

No.	Button Name	AVR Function	DVD	CD/CD-R	Tape	VCR (VID1)	TV (VID2)	CBL (VID3)	SAT (VID3)
1	Power On	Power On	Power On	Power On	Power On	Power On	Power On	Power On	Power On
2	Power Off	Power Off	Power Off	Power Off	Power Off	Power Off	Power Off	Power Off	Power Off
3	Mute	Mute	Mute	Mute	Mute	Mute	Mute	Mute	Mute
4	AVR	AVR Select							
5	DVD	DVD Input Select	DVD Select						
6	CD	CD Input Select		CD Select					
7	Tape	Tape Input Select			Tape Select				
8	VID 1	Video 1 Select				VCR Select			
9	VID 2	Video 2 Select					TV Select		
10	VID 3	Video 3 Select						VID3 Select	VID3 Select
11	VID 4	Video 4 Select							
12	AM/FM	Tuner Select							
13	6/8 Ch. Select	6/8 Ch. Input Select							
14	Learn								
15	Sleep	Sleep				Channel +	Channel +	Channel +	Channel +
16	Test	Test Tone	TV/DVD	Input Select		TV/VCR	TV/VCR	TV/Cable	TV/Sat
17	SPL	EzSet/SPL							
18	Volume Up	Volume Up		Input Level Up		Volume Up	Volume Up	Volume Up	Volume Up
19	Surround Select	Surround Mode Select		CDR Select		Channel –	Channel –	Channel –	Channel –
20	Night	Night Mode Select	Subtitle On/Off	CDR Select					
21	Multiroom	Multiroom Select							
22	Volume Down	Volume Down		Input Level Down			Volume Down	Volume Down	Volume Down
23	Channel/Guide	Channel Trim	Title					Info/Guide	Info/Guide
24	▲	Move/Adjust Up	Up			Up	Up	Up	Up
25	Speaker/Menu	Speaker Adjust	Menu	Intro Scan		Menu	Menu	Menu	Menu
26	◄	Move/Adjust Left	Left			Left	Left	Left	Left
27	Set	Set	Enter			Enter	Enter	Enter	Enter
28	►	Move/Adjust Right	Right			Right	Right	Right	Right
29	Digital/Exit	Digital Input Select	Open/Close			Exit	Exit	Exit	Exit
30	▼	Move/Adjust Down	Down			Down	Down	Down	Down
31	Delay/Prev. Ch.	Delay Adjust	Return	Open/Close			Prev Channel	Prev Channel	Prev Channel
32	1	1	1	1		1	1	1	1
33	2	2	2	2		2	2	2	2
34	3	3	3	3		3	3	3	3
35	4	4	4	4		4	4	4	4
36	5	5	5	5		5	5	5	5
37	6	6	6	6		6	6	6	6
38	7	7	7	7		7	7	7	7
39	8	8	8	8		8	8	8	8
40	Tun-M	Tuner Mode	Chapter	Repeat					
41	9	9	9	9		9	9	9	9
42	0	0	0	0		0	0	0	0
43	Memory	Memory	Audio	Time					
44	Tune Up	Tune Up	Next Chapter	Track Direct		Cancel	Sleep		

No.	Button Name	AVR Function	DVD	CD/CD-R	Tape	VCR (VID1)	TV (VID2)	CBL (VID3)	SAT (VID3)
45	Direct	Direct Tuner Entry	Angle	Random Play				FAV	FAV
46	Clear	Clear	Clear	Clear		Clear	Clear	Bypass	Next
47	Preset Up	Preset Tune Up	Slow Forward	+10				Music	Alt
48	Tune Down	Tune Down	Prev Chapter	Track Increment					
49	OSD	OSD		Program		OSD	OSD	OSD	OSD
50	D. Skip		Disc Skip	Disc Skip					
51	Preset Down	Preset Tune Down	Slow Rev						
52	M1	Macro 1							
53	M2	Macro 2							
54	M3	Macro 3							
55	M4	Macro 4							
56	Dolby	Dolby Modes							
57	DTS SURR	DTS Digital Modes							
58	DTS Neo:6	DTS Neo:6 Select							
59	Logic 7	Logic 7 Select							
60	Stereo	Stereo Mode Select							
61	Skip Down		Skip –	Skip –		Scan –			
62	Skip Up		Skip +	Skip +		Scan +			
63	Rewind		R. Search	R. Search	Rewind	Rewind			
64	Play		Play	Play	Play	Play			
65	Fast Forward		F. Search	F. Search	Fast Fwd	Fast Fwd		Day +	Day +
66	Record			Record	Record	Record			
67	Stop		Stop	Stop	Stop	Stop			
68	Pause		Pause	Pause		Pause			

SETUP CODE TABLE: TV

Manufacturer/Brand	Setup Code Number
A MARK	103 132
ADMIRAL	192
AKAI	001 160
AMPRO	070 164
AMSTRAD	053
ANAM	045 055 057 076 095 099 103 106 109 112 122
AOC	001 011 103
BLAUPUNKT	084
BROKSONIC	205 206
CANDLE	001 002 003 011
CAPEHART	059
CENTURION	170 171
CENTRONIC	045
CITIZEN	001 002 003 011 045 092 094 132
CLASSIC	045
CONCERTO	011
CONTEC	041 045 051 052
CORANDO	172
CORONADO	132
CRAIG	045 055 157 158 159
CROWN	045 132
CURTIS MATHES	001 092 107 132
CXC	045
DAEWOO	011 022 023 038 045 046 056 068 073 094 098 102 105 108 111 114 116 118 119 127 132
DAYTRON	107 132
DIGI LINK	200
DYNASTY	045
DYNATECH	063
ELECTROHOME	074 132
EMERSON	001 012 033 045 048 049 051 052 091 107 132 137 139 141 157 158 162 205
FISHER	013 058
FUNAI	033 045
FUTURETECH	045
GE	001 014 015 038 057 070 071 107 121 133 141 145 163 199
GOLDSTAR	011 093 097 101 103 104 107 110 113 118 128 132
GRUNDIG	193
HALL MARK	107
HARMAN KARDON	201
HITACHI	001 011 015 016 017 018 029 043 072 132 144 147
INFINITY	148
INKEL	120
JBL	148
JC PENNEY	001 011 014 015 030 035 092 132 145
JENSEN	019
JVC	038 040 079 134
KAWASHO	173
KEC	045
KENWOOD	001 204
KLOSS	002 060

Manufacturer/Brand	Setup Code Number
KMC	132
KTV	001 045 132 162
LLOYTRON	172 173
LODGENET	069
LOGIK	069
LUXMAN	011
LXI	013 021 053 077 145 148
MAGNAVOX	001 003 011 060 061 062 064 065 118 132 145 148
MARANTZ	001 074 148
MATSUI	148
MEMOREX	013 069 107
METZ	084
MGA	001 011 033 044 050 074 107
MIDLAND	199
MINERVA	084
MITSUBISHI	001 011 030 033 042 044 100 107 115 154 160 167 168
MTC	175 176
NAD	021 031
NATIONAL	177 178 179 180 181 182
NEC	001 013 022 025 030 042 057 121 123 125
NIKEI	045
ONKING	045
ONWA	045
OPTONICA	025 077
ORION	207 208 209 210 211
PANASONIC	038 057 076 087 148 169
PENNEY	199
PHILCO	001 003 011 030 045 057 060 061 064 065 118 132 148
PHILIPS	001 003 011 040 060 067 088 132 145 148
PIONEER	001 024 029 031 032 107 213 214
PORTLAND	011 132
PROSCAN	133
PROTON	059 107 122 132 165
QUASAR	038 057 087
RADIO SHACK	025 045 048 107 118 132 195 196 197 198
RCA	001 011 029 030 057 071 133 145 161 163 199
REALISTIC	013 025 045 048 195 196 197
RUNCO	152 153
SAA	183
SAMPO	001 059 107
SAMSUNG	051 085 092 096 104 107 118 124 128 132 145
SANYO	013 026 027 037 041 054 058 078
SCOTT	033 045 049 107 132
SEARS	011 013 021 033 035 058 078 092 107 132 145
SHARP	011 020 025 028 033 034 077 132 154
SIEMENS	084
SIGNATURE	069
SONY	043 067 075 117 130 136 194 212
SOUNDESIGN	003 033 045 107

SETUP CODE TABLE: TV

Manufacturer/Brand	Setup Code Number
SPECTRICON	103
SSS	011 045
SUPREMACY	002
SYLVANIA	001 003 011 060 061 064 065 107 118 131 145 148
SYMPHONIC	184
TANDY	077
TATUNG	057 063
TECHNICS	080
TECHWOOD	011
TEKNIKA	001 002 003 011 030 033 036 045 069 074 092 094 132
TELEFUNKEN	039 047 083
TELERENT	069
TERA	156
THOMSON	190 191
TMK	011 107
TOSHIBA	013 021 035 042 052 063 092 129 202
TOTEVISION	132
UNIVERSAL	014 015
VIDEO CONCEPTS	160
VIDTECH	011 107
WARDS	011 014 015 025 033 061 062 064 065 069 071 107 132 148
YAMAHA	001 011
YORK	107
YUPITERU	045
ZENITH	069 070 090 094
ZONDA	103

Manufacturer/Brand	Setup Code Number
AIWA	040
AKAI	022 048 050 108 109 126
AMPRO	076
AMSTRAD	133
ANAM	037 039 089
ASA	134
AUDIO DYNAMICS	018 029 044 048
BROKSONIC	041 043 110 147 166
CANDLE	134 135 137
CANON	034 037 039 135 140
CAPEHART	094
CITIZEN	134
CRAIG	003 045 116
CURTIS MATHES	037 039
DAEWOO	012 014 017 068 069 094 096 097 098 102 103 104
DAYTRON	094
DBX	018 029 044 048
DUAL	136
DYNATECH	040 057
ELECTROHOME	063
EMERSON	013 023 031 033 035 037 040 041 042 043 050 087 110 112 119
FERGUSON	136
FINLUX	133
FISHER	003 015 016 017
FUNAI	040 133
GE	037 039 067 076 093 095 124 127
GO VIDEO	113 117
GOLDSTAR	018 019 026 087 092 100 107
GRAETZ	136
HARMAN KARDON	018 049
HITACHI	011 040 048 067 118 130
INSTANT REPLAY	037 039
ITT	136
JCL	037 039
JC PENNEY	018 019 021 039 045 070 087
JENSEN	048
JVC	018 037 039 048 052 054 059 064 111 130 132
KENWOOD	020 044 048 052
LLOYD	040
LXI	019 020 040 087
MAGIN	045
MAGNAVOX	037 039 040 071 072
MARANTZ	018 037 039 071 073
MARTA	087
MATSUI	033 036
MEI	037 039
MEMOREX	003 017 020 037 039 040 057 076 087 115 120
MGA	049 050 063
MINOLTA	019 026

SETUP CODE TABLE: VCR

Manufacturer/Brand	Setup Code Number
MITSUBISHI	019 026 049 050 053 055 063 065 131 145 146
MTC	133
MULTITECH	030 040
NAD	139
NATIONAL	140
NEC	018 029 044 048 052
NORDMENDE	048
OPTIMUS	159
OPTONICA	057 058
ORION	147 166
PANASONIC	070 074 078 086 114 125 150 167 172
PENTAX	019 026 037 039 067
PHILCO	037 039 040 071
PHILIPS	037 039 040 058 071 075 087
PILOT	087
PIONEER	019 027 052
PORTLAND	094
PULSAR	076
QUARTZ	001 020
QUASAR	039 070 079 125 144
RADIO SHACK	133 134 137 140 141 142 152 158 159 160 161
RCA	019 026 039 066 067 093 095 124 125 127 157 172
REALISTIC	003 015 017 020 037 039 040 045 057 058 087 137 152 159 160
RICO	062
RUNCO	128
SABA	136
SAISHO	143
SALORA	020
SAMSUNG	038 045 088 090 091 093 095 098 099 101 105 106 109
SANSUI	028 048 052 116 147 166
SANYO	003 014 017 020 115
SCHAUB LORENZ	136
SCOTT	023 043 098 110 112
SEARS	003 015 016 017 019 020 026 037 047 077 084 087
SHARP	037 058 129 156
SHINTOM	030
SONY	003 016 037 056 060 061 062 080 081 082 129
SOUNDESIGN	040
STS	019
SYLVANIA	037 039 040 063 071
SYMPHONIC	040
TANDY	017 040
TASHICO	134
TATUNG	044 048
TEAC	040 044 048
TECHNICS	037 039
TEKNIKA	025 037 039 040 087
TELEFUNKEN	136
THOMAS	040

Manufacturer/Brand	Setup Code Number
THOMSON	136
THORN	136
TMK	013
TOSHIBA	015 019 047 051 063 085 098 112 155
TOTEVISION	045 087
UNITECH	045
VECTOR RESEARCH	018
VICTOR	052
VIDEO CONCEPTS	018 040 050
VIDEOSONIC	045
WARDS	003 019 023 030 037 039 040 045 057 058 112
YAMAHA	018 040 044 048
ZENITH	040 052 060 062 076 083 087

SETUP CODE TABLE: CD

Manufacturer/Brand	Setup Code Number
ADC	012
ADCOM	049 063 069
AIWA	072 111 118 156 170
AKAI	050 177 184
AUDIO TECHNICA	053
AUDIOACCESS	125
AUDIOFILE	211
BSR	044 064
CALIFORNIA AUDIO	015 109
CAPETRONIC	070
CARRERA	064 087
CARVER	051 057 136 140 141 143 144 145 185 186
CASIO	066 117 122 166
CLARINETTE	122 166
CROWN	042
CURTIS MATHES	066
DENON	187 188 213
EMERSON	049 052 093 108
FISHER	023 055 057 068
FRABA	117
FUNAI	126
GE	164
GENEXXA	017 096 108
GOLDSTAR	016 087
HAITAI	099 214
HARMAN KARDON	001 002 025 040 054 190 218 219
HITACHI	049 093
INKEL	026 027 216
JC PENNEY	021 066 098 147
JENSEN	153
JVC	029 176 195 196
KENWOOD	014 020 023 030 062 078 079 148 151 176 178 181
KYOCERA	012
LOTTE	108
LUXMAN	018 035 077 102
LXI	066 164
MAGNAVOX	039 051 113
MARANTZ	043 051 058 084 191 192 193
MCINTOSH	194
MCS	021 066 080 098
MEMOREX	096
MGA	032
MISSION	051
MITSUBISHI	032
MITSUMI	152
MODULAIRE	122 166
NAD	013 074 197 198
NAKAMICHI	199 200 201

Manufacturer/Brand	Setup Code Number
NEC	021 069
NIKKO	053 055
NSM	051
ONKYO	037 038 045 046 171 175 202 203
OPTIMUS	020 036 056 057 064 065 089 090 091 092 096 099 104 212
PANASONIC	015 075 109 119 158 183 204
PHILIPS	039 051 138 149 209
PIONEER	017 036 071 094 096 100 112 123 131 160 161 162 215
PROTON	051 210
QUASAR	015 109
RADIO SHACK	122 126 213
RCA	024 049 081 093 150
RCX	169
REALISTIC	049 056 057 058 093 095 104 105 108 164 166
ROTEL	051
SAE	051
SAMSUNG	028
SANSUI	047 051 081 134 157 172
SANYO	033 057 068 082 095 168
SCOTT	108
SEARS	066
SHARP	020 058 073 105 114 151 159 167 180 181
SHERWOOD	003 026 027 041 058 105 133
SIGNATURE	040
SONY	060 103 115 116 118 132 139 163 205 206 207 208 212 217
SOUNDSTREAM	124
STS	012
SYLVANIA	051
SYMPHONIC	059 110
TAEKWANG	177
TANDY	096
TEAC	011 022 048 058 085 086 106 107 110 121 137 146 154
TECHWOOD	083
THETA DIGITAL	039
TOSHIBA	013 074 097 151 155 173
VECTOR RESEARCH	087
VICTOR	029 120 130
WARDS	040 095
YAMAHA	019 031 053 061 135 169
YORK	122 166

SETUP CODE TABLE: TAPE

Manufacturer/Brand	Setup Code Number
HARMAN KARDON	001

SETUP CODE TABLE: AUDIO

Manufacturer/Brand	Setup Code Number
HARMAN KARDON	001

SETUP CODE TABLE: DVD

Manufacturer/Brand	Setup Code Number
APEX DIGITAL	061
CALIFORNIA AUDIO	040
DENON	002 019 022 034 051
GE	003 004
GOLDSTAR	005
HARMAN KARDON	001 032
JVC	006
KENWOOD	007 050
LG	005 055 064
LOTTE	008
MAGNAVOX	033 056
MARANTZ	033 059
MITSUBISHI	023 036
NAD	010 062
ONKYO	009 015 048
OPTIMUS	011 050
PANASONIC	024 025 030 034 035 044 052
PHILIPS	033 056
PIONEER	012 020 038 041 046 047 065
PROCEED	060
PROSCAN	003 004 037
RCA	003 004 018 037
RUNCO	027
SAMSUNG	031 053 054
SANYO	013 049
SHARP	021 028 050
SONY	015 029 043 045
TECHNICS	026
THOMSON	003 004
TOSHIBA	009 033 047 057 058
YAMAHA	016 017 030 063
ZENITH	005 033 055 064
ZENITH DIVX	039

Manufacturer/Brand	Setup Code Number
ALPHASTAR	472
ALPHASTAR DBS	450
ALPHASTAR DSR	422 442
AMPLICA	356
BIRDVIEW	414 425
BSR	359
CAPETRONICS	359
CHANNEL MASTER	320 321 322 325 361
CHAPARRAL	315 316 319 380 451
CITOH	360
CURTIS MATHES	356
DRAKE	312 313 317 318 413 481
DX ANTENNA	331 352 362 379 483
ECHOSTAR	364 395 397 452 453 463 477 478 484 485
ELECTRO HOME	392
EUROPLUS	415
FUJITSU	324 328 329 334
GENERAL INSTRUMENT	303 311 323 365 403 454 468 474
HITACHI DBS	455
HOUSTON TRACKER	463
HUGHES	372 437
HYTEK	359
JANIEL	366
JERROLD	367 454 464 468
KATHREIN	410
LEGEND	453
LUXOR	368
MACOM	317 365 369 370 371
MAGNAVOX	461 473
MEMOREX	453
NEXTWAVE	423 424
NORSAT	373 374
OPTIMUS	466
PANASONIC	366 469
PANASONIC DBS	457
PANSAT	420
PERSONAL CABLE	418
PHILIPS	375
PICO	407
PRESIDENT	326 404
PRIMESTAR	412 454 464 475
RCA	301 408 436 439 458 465
REALISTIC	349 377 480
SAMSUNG	422 442
SATELLITE SERVICE CO	335 341 353 388
SCIENTIFIC ATLANTA	339
SONY	405 438
STAR CHOICE DBS	459
STARCAST	347
SUPER GUIDE	327 423 424
TEECOM	330 333 378 390 391 393 409
TOSHIBA	302 426 443 460 461 462 470
UNIDEN	323 332 348 349 350 351 354 355 381 382 383 389 403 466 479 480
ZENITH	385 386 387 394 419

SETUP CODE TABLE: CBL

Manufacturer/Brand	Setup Code Number
ABC	001 003 011 045 048 052 059 110
ALLEGRO	111
AMERICAST	212
ANTRONIX	021
ARCHER	012 014 021 031 112
BELCOR	113
CABLE STAR	033 113
CENTURION	092
CENTURY	014
CITIZEN	014 111
COLOUR VOICE	069 090
COMBANO	083 084
COMTRONICS	026 037
DIAMOND	030
DIGI	114
EAGLE	027 037 046 186
EASTERN	063 066 070 115
ELECTRICORD	039
EMERSON	112
FOCUS	116
G.I.	001 003 011 015 017 093 095 096 097
GC ELECTRONICS	113
GE	076
GEMINI	015 029 032 060
GENERAL	210
GENERAL INSTRUMENT	168
GOLDEN CHANNEL	037
GOODMIND	112
HAMLIN	055 056 061 099 100 101 117 175 207 208
HITACHI	001 061 188
HOSPITALITY	074 080
JASCO	111
JERROLD	001 002 003 011 015 016 017 073 093 095 096 097 162 167
LINDSAY	118
M-NET	043
MACOM	040 191
MAGNAVOX	017 019 068 082
MEMOREX	058
MOVIE TIME	035 039
NSC	022 035 044 075 190
OAK	023 038 043 059 094 196 197
PACE	179
PANASONIC	050 053 176 177 189 214
PANTHER	114
PARAGON	058
PHILIPS	013 019 020 027 069 085 090
PIONEER	001 041 057 079 119 171 200 209
PRELUDE	120
PTS	018 054 075 076

Manufacturer/Brand	Setup Code Number
PULSAR	058
RADIO SHACK	111 112 213
RCA	053 214
RECOTON	116
REGAL	055 056 061 099 100 101 207
REGENCY	063 115
REMBRANT	032
SAMSUNG	037 072 186
SCIENTIFIC ATLANTA	003 018 047 048 049 051 052 110 183 184 203 204
SEAM	121
SHERITECH	029
SIGNAL	037
SIGNATURE	001 188
SL MARX	037
SPRUCER	053 081 177 189
STARCOM	002 011 015 016 163
STARGATE	015 037 120
SYLVANIA	071
TADIRAN	037
TANDY	024
TELECAPATION	028
TEXSCAN	036 071
TFC	122
TIMELESS	123
TOCOM	045 046 062 170 205
TOSHIBA	058
UNIKA	014 021 031
UNITED CABLE	011 059
UNIVERSAL	012 014 021 031 033 034 039 042 113
VIDEOWAY	124 211
VIEWSTAR	019 022 025 086 087 088 089 190
ZENITH	058 065 098 125 211
ZENTEK	116

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch is pushed	• No AC Power	• Make certain AC power cord is plugged into a live outlet • Check to see whether outlet is switch-controlled
Display lights, but no sound or picture	• Intermittent input connections • Mute is on • Volume control is down	• Make certain that all input and speaker connections are secure • Press Mute Button 43 • Turn up volume control
Unit turns on, but front panel display does not light up	• Display brightness is turned off	• Follow the instructions in the Display Brightness section on page 32 so that the display is set to VFD FULL
No sound from any speaker; light around power switch is red	• Amplifier is in protection mode due to possible short • Amplifier is in protection mode due to internal problems	• Check speaker wire connections for shorts at receiver and speaker ends • Contact your local Harman Kardon service center
No sound from surround or center speakers	• Incorrect surround mode • Input is monaural • Incorrect configuration • Stereo or Mono program material	• Select a mode other than Stereo • There is no surround information from mono sources • Check speaker mode configuration • The surround decoder may not create center- or rear-channel information from nonencoded programs
Unit does not respond to remote commands	• Weak batteries in remote • Wrong device selected • Remote sensor is obscured	• Change remote batteries • Press the AVR selector • Make certain front panel sensor is visible to remote or connect remote sensor
Intermittent buzzing in tuner	• Local interference	• Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the channel indicator display and digital audio stops	• Digital audio feed paused	• Resume play for DVD • Check that Digital Input is selected

Processor Reset

In the rare case where the unit's operation or the displays seem abnormal, the cause may involve the erratic operation of the system's memory or microprocessor.

To correct this problem, first unplug the unit from the AC wall outlet and wait at least three minutes. After the pause, reconnect the AC power cord and check the unit's operation. If the system still malfunctions, a system reset may clear the problem.

To clear the AVR 325's entire system memory including tuner presets, output level settings, delay times and speaker configuration data, first put the unit in Standby by pressing the System Power Control Button 2.

Next, press and hold the Surround Mode 7 and the Tuner Mode Selector 16 buttons for three seconds.

The unit will turn on automatically and display the RESET message in the Main Information Display 29.

NOTE: Resetting the processor will erase any configuration settings you have made for speakers, output levels, surround modes, digital input assignments as well as the tuner presets. After a reset the unit will be returned to the factory presets, and all settings for these items must be reentered.

If the system is still operating incorrectly, there may have been an electronic discharge or severe AC line interference that has corrupted the memory or microprocessor.

If these steps do not solve the problem, consult an authorized Harman Kardon service center.

Audio Section

Stereo Mode

Continuous Average Power (FTC)

65 Watts per channel, 20Hz–20kHz,
@ <0.07% THD, both channels driven into 8 ohms

Seven-Channel Surround Modes

Power per Individual Channel

Front L&R channels:
50 Watts per channel
@ <0.07% THD, 20Hz–20kHz into 8 ohms

Center channel:
50 Watts @ <0.07% THD, 20Hz–20kHz into 8 ohms

Surround (L & R Side, L & R back) channels:
50 Watts per channel
@ <0.07% THD, 20Hz–20kHz into 8 ohms

Input Sensitivity/Impedance	
Linear (High-Level)	200mV/47k ohms
Signal-to-Noise Ratio (IHF-A)	95dB
Surround System Adjacent Channel Separation	
Pro Logic I/II	40dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, –3dB)	10Hz – 100kHz
High Instantaneous Current Capability (HCC)	±35 Amps
Transient Intermodulation Distortion (TIM)	Unmeasurable
Slew Rate	40V/µsec

FM Tuner Section

Frequency Range	87.5–108.0MHz
Usable Sensitivity	IHF 1.3µV/13.2dBf
Signal-to-Noise Ratio	Mono/Stereo 70/68dB
Distortion	Mono/Stereo 0.2/0.3%
Stereo Separation	40dB @ 1kHz
Selectivity	±400kHz, 70dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	325–1710 kHz
Signal-to-Noise Ratio	45dB
Usable Sensitivity	Loop 500 µV
Distortion	1kHz, 50% Mod 0.8%
Selectivity	±10kHz, 30dB

Video Section

Television Format	NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response (Composite and S-Video)	10Hz–8MHz (–3dB)
Video Frequency Response (Component Video)	10Hz–50MHz (–3dB)

General

Power Requirement	AC 120V/60Hz	
Power Consumption	118W idle, 890W maximum (7 channels driven)	
Dimensions	Width	17.3 inches (440mm)
	Height	6.5 inches (165mm)
	Depth	17.1 inches (435mm)
Weight	40 lb (18.1kg)	

Depth measurement includes knobs, buttons and terminal connections.
Height measurement includes feet and chassis.
All features and specifications are subject to change without notice.

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